ENGINEERING
NEWS-RECORD

Albert Cole's problem: Housing that money can't buy *p. 21*

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PRUDENTIAL

Wrought Iron Pipe adds long-term life insurance to 11 piping services here

Designers of Prudential Insurance Company of America's South Central Home Office, Jacksonville, Florida, selected wrought iron pipe for "maximum coverage" against future maintenance of piping systems.

Proof of their high regard for wrought iron pipe is the extensive use of this material in the following corrosive services: water lines, water softener and soft water piping, underground recirculating lines, underground gas piping, feed water piping system, boiler blowdown system, interior storm drainage and carbon dioxide lines for fire protection; underground fuel oil lines and steam heating return piping.

Architects for this job were Kemp, Bunch and Jackson of Jacksonville. Consulting Engineers, Van Wagenen, Taylor and Van Wagenen; Mechanical Contractors, Henley and Beckwith, Inc., also located in Jacksonville.

We have hundreds of case-history reports that tell why this material gets specified . . . as a long-life additive and a maintenance-reducer in modern buildings everywhere. Write for our booklet, "Piping for Permanence."

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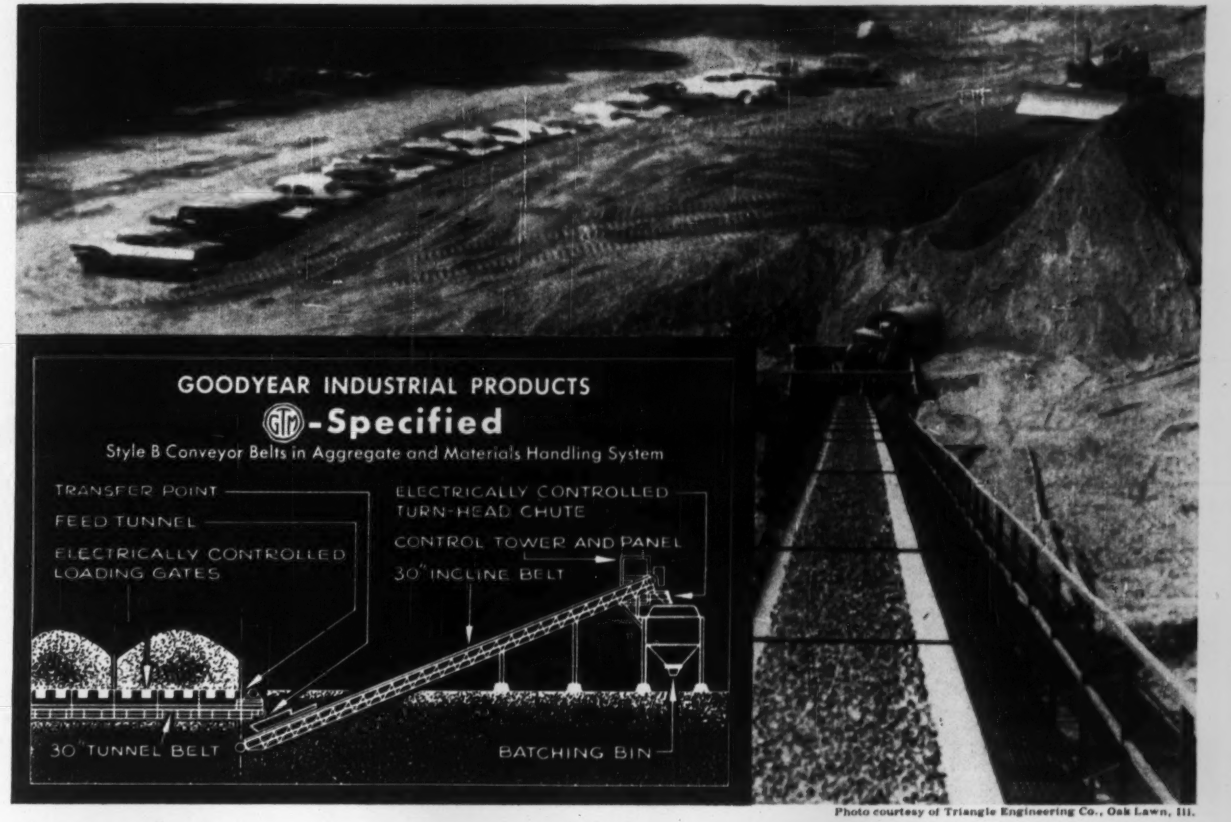
GOODYEAR INDUSTRIAL PRODUCTS
G.T.M.-Specified
Style B Conveyor Belts in Aggregate and Materials Handling System
TRANSFER POINT
FEED TUNNEL
ELECTRICALLY CONTROLLED LOADING GATES
ELECTRICALLY CONTROLLED TURN-HEAD CHUTE
CONTROL TOWER AND PANEL
30" INCLINE BELT
30" TUNNEL BELT
BATCHING BIN

Photo courtesy of Triangle Engineering Co., Oak Lawn, Ill.

Belts out new highways twice as fast—at 2/3rds the cost

Giving a real boost to the highway building program is this unique materials-handling conveyor system developed by a Midwestern firm. Sand, aggregate and cement—in controlled sequence—are metered through openings in an underground steel "tunnel." Then they're carried through this 280-foot "tunnel" on one conveyor belt—up to the mixer on a second, interconnected belt.

The belts are Goodyear Style B Conveyor Belts. They were recommended by the G.T.M.—Goodyear Technical Man—who worked closely with the development engineers. And so successful were they in perfecting this portable 525-ton-per-hour unit, that road builders are able to eliminate *two* costly 1½-yard cranes—save 75% on labor—cut maintenance expenses by 85%.

Moreover, the conveyorized batch plant can turn out 1 mile of 24-foot-span highway—per day. That's twice the speed of old methods. And it cuts the concrete-making costs by an eye-opening one-third!

Need some technical help with a pet cost-cutter-and-labor-saver you've been working on? If it uses industrial rubber products of any kind, you can't do better than talk to the G.T.M. And you can reach him through your Goodyear Distributor—or through Goodyear, Industrial Products Division, Akron 16, Ohio.

CONVEYOR BELTS by

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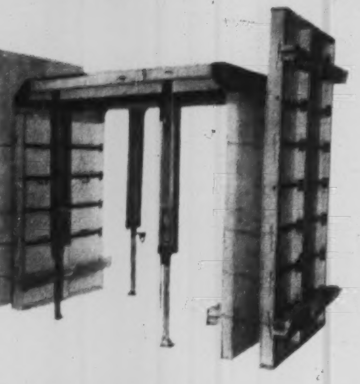
IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

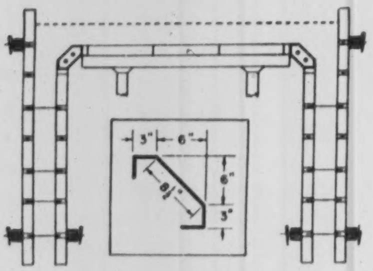
Culvert Forming



Symons Develops New Haunch Form for Culverts

Symons Safety Shores Used to Support Slab

Symons now has a new 9 x 9 inch steel haunch section designed to connect Symons standard wall panels and slab panels for the monolithic pouring of culverts. This new section provides for a 3-inch face on the roof slab and on the wall with a 45-degree-angle surface 8½ inches wide between wall and roof. No built-up forms or other special equipment is necessary.



Made of 11-gauge hot rolled steel this new section is available in 4, 6, and 8 foot lengths. It can be used with either metal frame or wood frame forms. Symons regular form hardware is used for securing the steel section to Symons standard forms. No special fittings are required.

Symons forms, shores and column clamps may be rented with purchase option. FREE literature on Symons products is available upon request.

S Symons

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Chicago 39, Illinois

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EIGHTY-THIRD YEAR OF PUBLICATION

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A WORKHORSE RIG for WORKHORSE JOBS!

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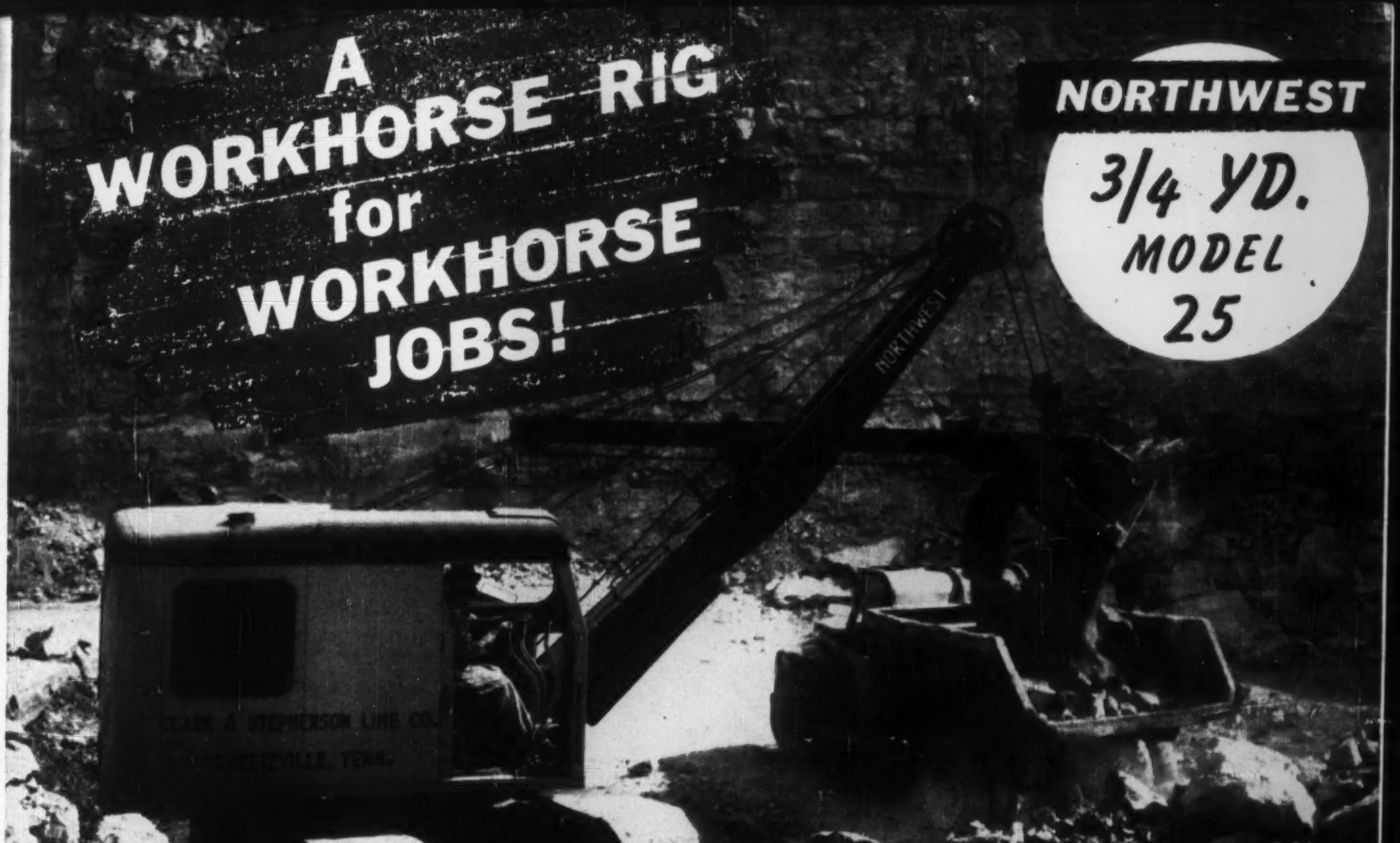
3/4 YD. MODEL 25



You don't have to take anybody's word—you don't have to believe the advertising on the Northwest Model 25's superiority. Go out and take a look at it in rock digging. Then compare it with *any other ¾ yd. rig on the market.*

It's the workhorse of the industry. These rigs load fast! Here is plenty of power combined with the Northwest Dual Independent Crowd that utilizes force other independent crowd shovels *waste.* No stutter—no restarts—no dipper juggling either in the bank or getting the load to the truck.

Compare it as a Pullshovel, Dragline or Crane. It's easy to convert. Booms are sturdier for workhorse digging and lifting. Swing Clutches are Uniform Pressure Clutches that eliminate the jerks and grabs that reduce output. The "Feather-Touch" Clutch Control gives ease of operation, without resorting to delicate mechanisms, valves, pumps and piping and at the same time retains the *feel of the load.*

There is a wide range of boom hoist equipment with which to meet your problem. There is flexibility in crawler dimensions. It is an answer to every problem where ¾ yd. capacity is the right size, and you have a full ¾ yd. machine that will handle work that smaller machines of the same rated capacity can't handle.

It's a workhorse!

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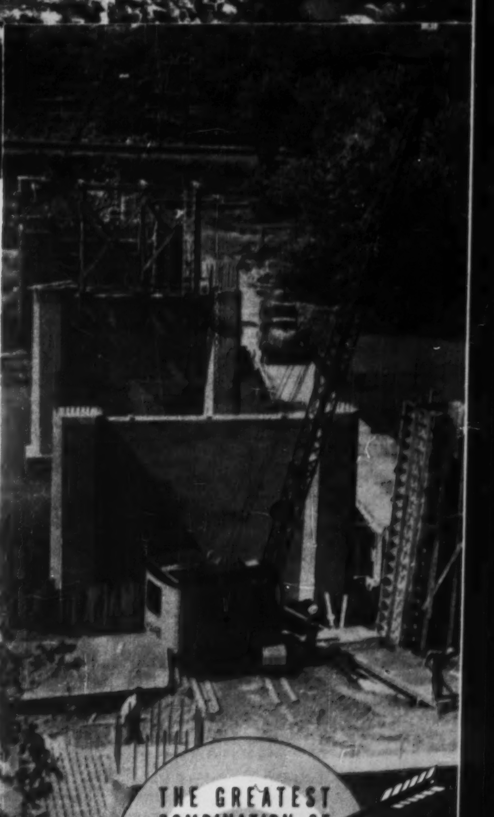

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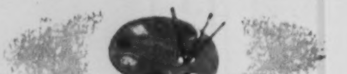

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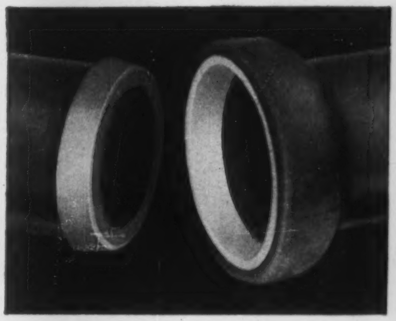
Write for special report showing Rust-Oleum penetration to bare metal.

Protect your community's health SIX WAYS with longer, stronger AMVIT Clay Pipe

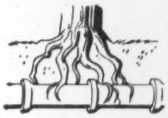
Outstanding Mechanical Joint on pipe over 4 feet long One of your City's Lifelines



Each year thousands of taxpayer's dollars are *wasted* on "substitute" materials used in sewer lines. Failure and collapse of non-clay sewers endangers the health of the community. Sewers must be constructed of permanent materials for they carry to safe disposal thousands of tons of waste laden with dangerous and deadly bacteria.

Amvit Jointed Clay Pipe gives decades of uninterrupted underground service. Neither joint nor pipe is affected by these factors:

1. ROOTS

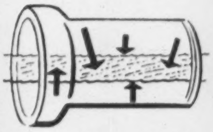


force the pipe out of line and clog the system in search of moisture. Amvit is a compression joint on the ball and socket principle. The surfaces of both bell and spigot are in constant compression. Roots cannot enter the line.

2. CHEMICAL ATTACK

is from acid-laden, high temperature sewage, discharged from dishwashers, garbage disposal units and washing machines. Like the clay pipe, Amvit Joint is acid resistant and will not corrode or decompose.

3. FLOW LINE ATTACK



refers to that section of the pipe which lies between low and high water. Grease and scum tend to build up here and acts as a solvent on certain synthetic substitute pipes. The design of the Amvit Joint assures that the pipe is self centered at all times. This gives perfect alignment and self-cleansing.

4. EROSION

is the wearing out of pipe by abrasive action of sand and gravel. Soft pipes become scratched and roughened and tend to clog up. Because Amvit is a really tight joint, no foreign matter can possibly enter the line.

5. DECOMPOSITION

is the chemical breakdown of the component elements of the pipe. Only clay pipe resists decomposition. Like the pipe, the joint is unaffected by ordinary conditions of underground service.

6. RODENTS AND TERMITES

will gnaw away wrappings and coatings of pipe. Amvit Clay Pipe defies even the sharpest toothed rodent and is immune to termite attack.

For more information on how Amvit can help cut your sewer project costs, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

*T. M. Registered

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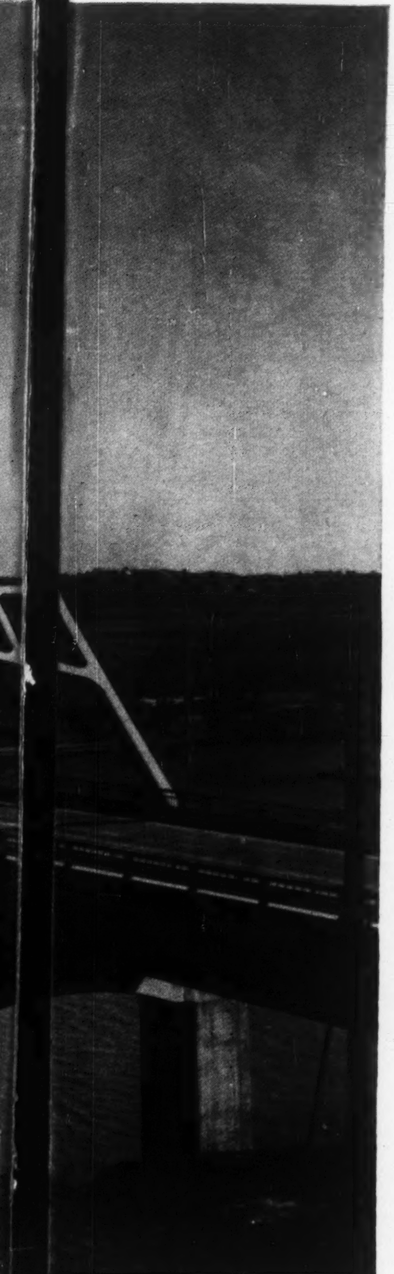
—the big step forward in bridge construction

. . 1825 tons of USS TRI-TEN "E" Steel are used in award-winning bridge



The Jefferson City Bridge was singled out for honorable mention by the American Institute of Steel Construction as among the most beautiful bridges* opened for traffic in 1955. This span across the Missouri River is typical of the more than 95 major bridges that have been built with USS High Strength Steels in the past four years.

The 3093′9″-long Jefferson City Bridge features a three-span continuous-tied arch unit with spans measuring 416′, 640′ and 416′. At present it carries a 28′ roadway flanked by two 5′ sidewalks inside the trusses, but sidewalks eventually can be moved outside the trusses to expand the roadway to 38′. USS Tri-Ten "E" Steel is used in trusses, web members and expansion devices.

Because USS Tri-Ten "E" Steel's yield point is 50% higher than that of structural carbon steel (ASTM A7) in thickness of ¾″ and less, and because it has twice the resistance to atmospheric corrosion, it was possible to safely use this grade in lighter sections throughout.

This not only saved weight, thus saving steel and reducing transportation and erection costs, but resulted in even more important secondary savings. The smaller steel sections used, by decreasing the dead load and lessening the wind area, made it possible to reduce the size—and cost—of the piers and shafts.

Here again, as in other important bridges built with USS High Strength Steels, the resultant accumulated savings add up to important cost reductions. (In some cases these have run as high as 15% of the cost of the structure.)

For further information on ways that USS Tri-Ten "E" and other USS High Strength Steels—USS Man-Ten and USS Cor-Ten—can be incorporated in your designs to provide maximum strength, safety and durability with a minimum of weight and costs, send for a copy of our "Design Manual for High Strength Steels." Write on your company letterhead to United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

**The prize-winning "most beautiful" long span bridge—the Missouri River Bridge at Leavenworth, Kan.—was also built with* USS Tri-Ten *"E" Steel.*

◀ **The Jefferson City-Missouri River Bridge**

Owner—Missouri State Highway Department

Design—Sverdrup & Parcel, Inc., St. Louis, Mo.

Fabrication—Truss span by Stupp Brothers Bridge and Iron Company, St. Louis, Mo. Approach superstructure by Pacific Bridge Company, San Francisco, Calif.

Erection—John Beasley of Dallas, Texas

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1933 UNITED STATES STEEL USS HIGH STRENGTH STEELS 1957
24 YEARS OF PERFORMANCE

UNITED STATES STEEL

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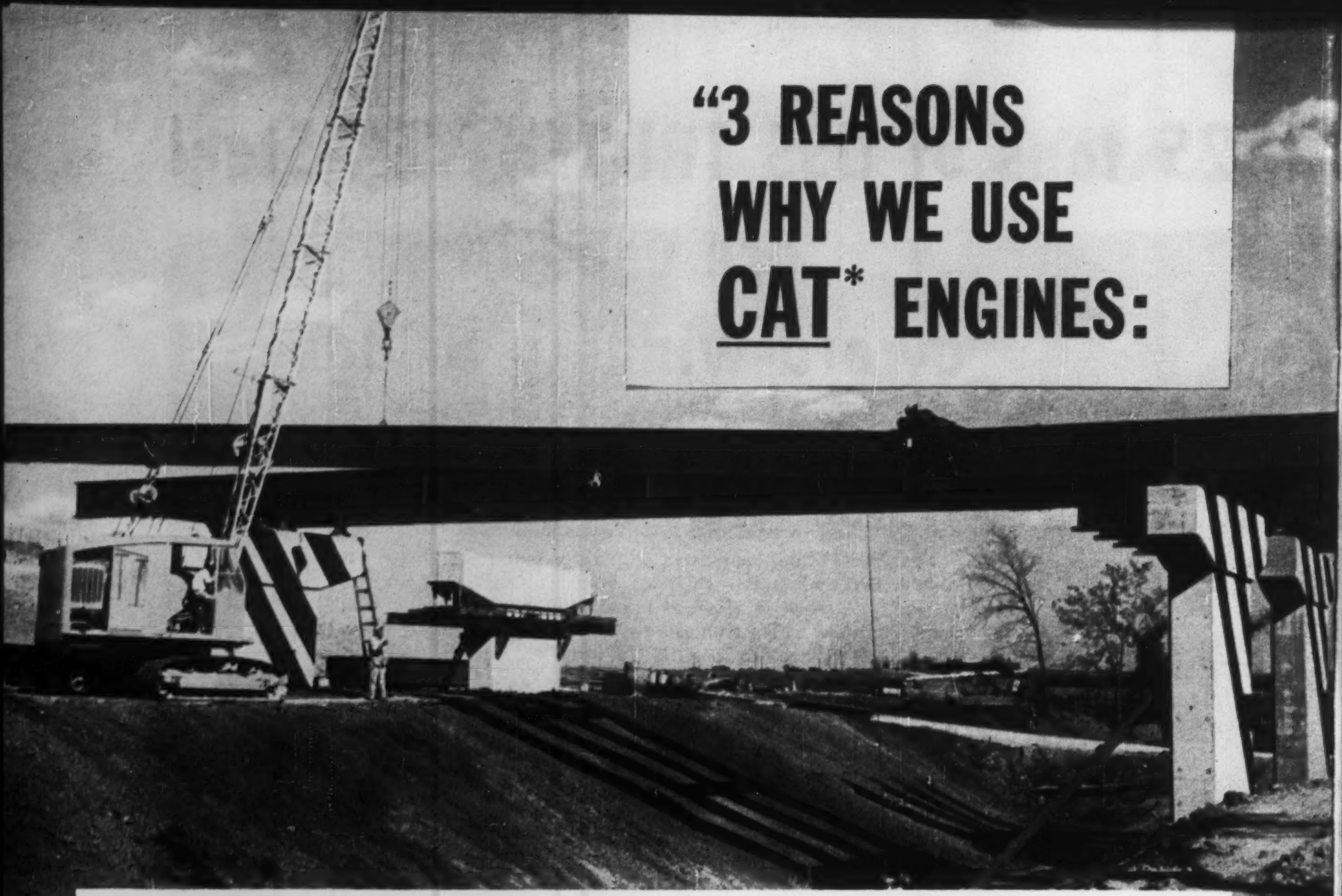

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1 All the power we need to do the job easily.

2 Maximum dependability with minimum good care.

3 Operators prefer Cat power to work with."

NELSON ARMSTRONG, *Supt.*
Maxwell Bridge Co.

Those three reasons tell why Maxwell Bridge Co., of Columbus, Kansas, powers its cranes and excavators with Caterpillar Diesel Engines. The Koehring Crane shown here, placing I-beams for a bridge 5 miles west of Emporia, is one of 12 machines owned by Maxwell. Its engine? A Caterpillar D318, with well over 4000 hours on the meter.

Operators who have worked for this company from 8 to 25 years are particular about their power. Busy all year around, each man services his own machine. Naturally they want an engine that stays on the job without tinkering—and when they're asked to name their preference, they choose Caterpillar.

Most manufacturers of excavating equipment can supply Cat Diesels as original power. Or Caterpillar Dealers are ready to install these dependable engines as replacement power. A full line of engines is available. The D318, for example, is rated at 137 HP (maximum) at 2000 RPM.

For the power you need and for service and parts you can trust, call your Caterpillar Dealer. He's as near as your telephone.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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MODERN HEAVY-DUTY DIESEL ENGINES

Reader Comment

Road Public Relations

Sir—The purpose of this letter is to inform you of what we believe to be a magnificent piece of public service work contributed by television station WREC (Channel 3) in Memphis.

Our firm, in association with the firm of Clark, Daily & Dietz, structural engineers, is currently engaged in the preparation of plans and specifications for the construction of the interstate highway system in Memphis and parts of Shelby County, Tenn. Studies relative to these routes have extended from early 1955 to date.

Through local press avenues, every effort had been made throughout this developmental period to keep the public fully apprised of what impended. However, as it became more evident to the public that the interstate system was less a dream and more an approaching reality, there were rumblings of a sort that indicated public fear. Memphis had had no expressways and most Memphians had not had the experience of driving on expressways, particularly of the type envisaged as a part of the interstate system.

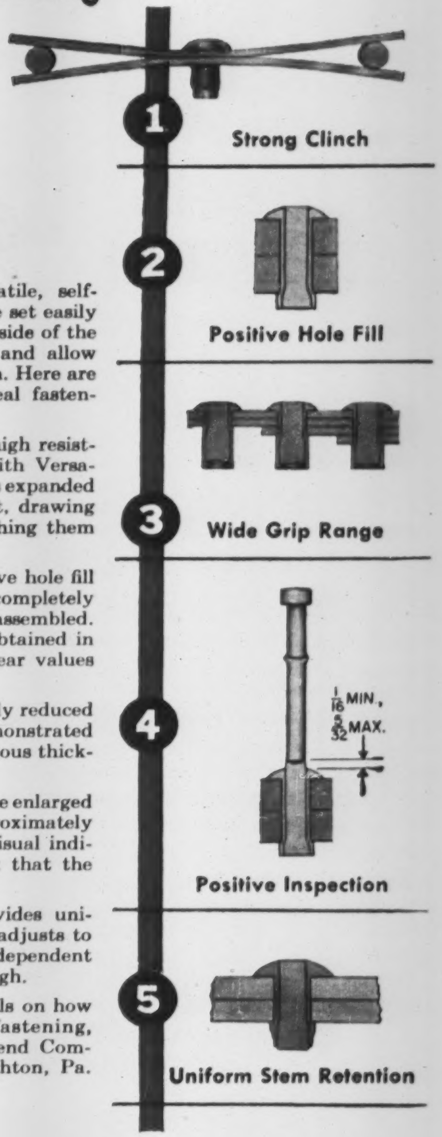
These fears made themselves most manifest at a public hearing which was held in Memphis relative to a 15 mile, semi-rural portion of the approximately 60 miles of interstate to be located in the Memphis-Shelby County area. Thorough press coverage of this misunderstood hearing further introduced fears into the minds of the Memphis-Shelby County populace.

There was understandable concern on the part of local and state elected and appointed officials at this time. It was wisely determined on the part of these officials that an inspection trip to be followed by a report to the Memphis-Shelby County public was in order, this inspection trip to take the form of a visit to four southern cities which either had completed expressways or which were well along in the building of expressways.

Accompanying the group which made this trip were representatives of the television station mentioned above. These representatives through the use

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Five reasons why Townsend Versa-rivets* give you superior fastening



Townsend Versa-rivets are versatile, self-plugging blind rivets which can be set easily and rapidly by one man from one side of the work. They save assembly time and allow greater flexibility in product design. Here are the five qualities which mean ideal fastening at lower costs:

1. Strong clinch and resulting high resistance to vibration are obtained with Versa-rivets. In setting them, the shank is expanded against the face of the back sheet, drawing the two sheets together and clinching them effectively, as shown above.

2. Versa-rivets provide a positive hole fill because the stem is drawn down to completely fill the hole in the members being assembled. Sound, strong riveted joints are obtained in holes up to .025" oversize with shear values comparable to solid rivets.

3. Inventory problems are greatly reduced by the wide grip range as demonstrated above. A single length handles various thicknesses.

4. When the Versa-rivet is set, the enlarged section of the stem protrudes approximately 3/32" above the rivet head, giving visual indication from one side of the work that the rivet is properly set.

5. The Versa-rivet always provides uniform strength as the stem always adjusts to fill the hole. Stem retention is independent of the hole size and is uniformly high.

If you would like complete details on how Versa-rivets can improve your fastening, write for Bulletin TL-119. Townsend Company, P.O. Box 237-L, New Brighton, Pa.

**Patents issued & pending.*

The Fastening Authority

Townsend

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NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Rivet Division • Santa Ana, California

***In Canada:** Parmenter & Bulloch Manufacturing Company, Ltd., Gananoque, Ontario*

Above: Gymnasium and shop buildings of Ellensburg High School, Ellensburg, Washington, are thin shell concrete poured over engineered and prefabricated falsework by Timber Structures, Inc. Gymnasium is 175 feet in span, and shop building has span of 85 feet. Falsework has been moved into position for second pour. Right: reinforced concrete ribs anchor into buttresses between buildings. Below: Multi-purpose building is poured in complete units. Architects-Engineers: Maloney & Whitney of Seattle; Wall, Bartram & Sanford, Junction City, Oregon, are general contractors.

Engineered Falsework Lowers Costs

on Concrete Shell High School Buildings

In specifying engineered and prefabricated falsework by Timber Structures, Inc., contractors Wall, Bartram & Sanford lowered their costs and speeded completion. Precision fabricated, the falsework needed only jobsite assembly and erection. After the first pouring, forms were decentered and moved intact into position for subsequent pours.

Thorough engineering, with a liberal safety margin, eliminated the possibility of failure with its dangers and unpredictable costs.

A quarter century of experience, with sustained service and responsibility in laminating and fabricating hundreds of falsework applications, makes Timber Structures, Inc. especially well qualified to assist you. Engineering facilities are available to whatever extent desired.

Take the "unpredictables" out of your next project. Call your nearest Timber Structures representative, or write us for information.

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P.O. BOX 3782-C, PORTLAND 8, OREGON
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TIMBER STRUCTURES, INC. OF CALIFORNIA
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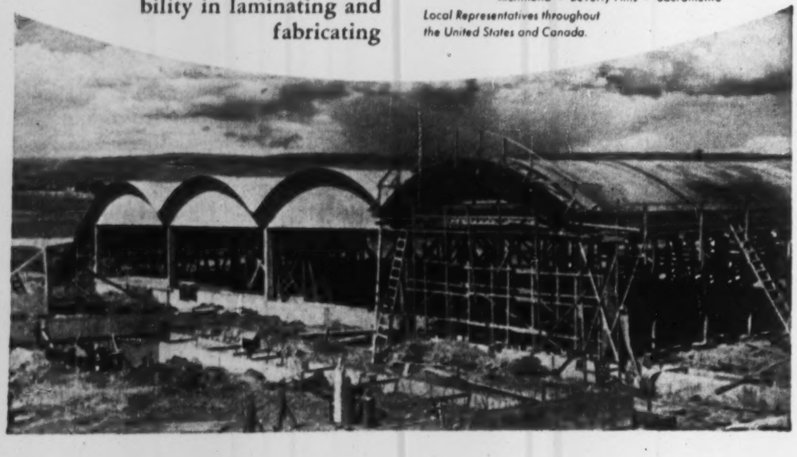
the United States and Canada.



of helicopters, filmed interviews between the Memphis-Shelby County delegation and officials in the cities visited, by the use of "man on the street" type interviews, by high grade professional editing, planning and producing were able to present to the Memphis and Shelby County citizenry what we consider to be an excellent report of the visits to the other cities.

They termed the television series a "Tale of Four Cities," each presentation of which was a 30 minute program at what is considered a maximal Sunday daytime viewing time—12:30 p.m. They culminated the series with a one hour program on the City of Memphis wherein they showed the present situation (helicopter shots of extremely congested streets throughout the city), and then presented analyses and discussions by representatives of our firm and by those officials who had made the trip of what the situation would be after the interstate system in Memphis and Shelby County had been built.

This series has, in our opinion, done much to make Memphians more receptive to the coming program of express type facilities and has been a very real aid in achieving thorough public understanding of the fact that these routes are needed, that they were located on the basis of sound studies concerning the myriad aspects of urban function, that they have been carefully reviewed and concurred in by all levels of state and federal government, that property owners will not be summarily dealt with, that the program will not be implemented so rapidly that there will be mass and instantaneous displacement of either persons or business, in short that there is relatively little to fear.

W. S. POLLARD
Chief engineer
Harland Bartholomew and Associates
St. Louis, Mo.

Salary Gains Challenged

SIR—The article "How Engineers' Salaries Have Changed—And Why" by Authur Richards (ENR May 6, p. 46) contains an interesting but misleading comparison between the salary distributions among highway engineers, 1930 vs. 1956. With these data, Mr. Richards denies there is a lag in economic gains for engineers. The charts show rank and file engineers to have tripled salaries relative to 1930 and more advanced engineers now earning approximately double the salaries of their 1930 counterparts.

Mr. Richards is fascinated by his charts and reaches the conclusion: "It is quite obvious to me from the data herein shown, that engineers are thor-

THE RED CIRCLES INDICATE STRUCTURES BUILT ON RAYMOND FOUNDATIONS

Photo by Fairchild Aerial Surveys, Inc.

In Boston . . . 81 STRUCTURES *REST ON* RAYMOND FOUNDATIONS

As you can see, this section of historic, venerable Boston between Fenway Park . . . a part of which is shown in the foreground . . . and the Harbor is liberally sprinkled with Raymond-supported structures. But this is only a small segment of the foundation contracts we have completed in this home of tradition, thumping Ted Williams and the Red Sox. For example, the John Hancock Mutual Life Insurance Company Building, Mystic River Bridge, new John Fitzgerald Expressway, Boston Museum of Science, the administration building and control tower at Logan International Airport are just a few of Boston's more familiar landmarks built on Raymond piles.

What you see here is equally evident in other major cities across the country. Wherever you travel, you are almost certain to visit or see a Raymond-supported structure. May we apply this experience and knowledge to your next foundation or heavy construction project?

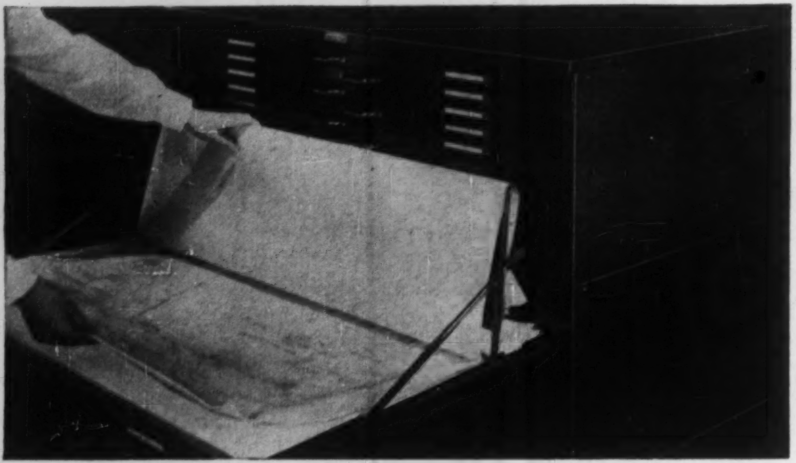
FOUNDATIONS FOR THE STRUCTURES OF AMERICA

AROUND THE WORLD
FOUNDED 1897

COMPLETE CONSTRUCTION SERVICES ABROAD

RAYMOND
CONCRETE PILE CO.
140 Cedar Street, New York 6, N.Y.
Branch Offices in Principal Cities of the United States.
Subsidiaries in Canada, Latin America and other countries throughout the world.

You are cordially invited to send for our new Highway Brochure, which gives a detailed resume of how Raymond can help you and the National Highway Program. Just write **Dpt. E-16**, Raymond Concrete Pile Co., 140 Cedar Street, New York 6, N. Y.



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Here's a fast and safe way to handle your valuable active tracings—and only Hamilton Shallow Drawer Units have it!

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DRAFTING EQUIPMENT

[illegible]

oughly competent to manage themselves in matters pertaining to their own economic welfare. In fact, so far as known, no professional engineering society has ever doubted that the engineer himself is the best master of his own destiny."

It is common knowledge that relatively unschooled office clerical workers, domestic help, delivery boys, bus drivers and many other catagories now earn double, triple, and more, the comparable 1930 salaries. Then why give engineers credit for partially favorable current conditions over which they have no control, viz: A booming defense industry need for young engineers, spreading its influence over all technical branches, coupled with a severe shortage of engineering graduates? His data have a more logical interpretation: A highway engineer in 1930 could look forward to quadrupling his own salary if he were capable and fortunate enough to rise to the top of his field. The 1956 highway engineer has little potential percentage increase to anticipate.

The conclusion in the article is unfortunate. It tends to foster unwarranted complacency among some engineer readers who only scan the article. On the other hand, well informed and realistic engineers know that the profession does need assistance from engineering societies to foster its needed advancement economically.

MARTIN M. BROWN
White Plains, N. Y.

Bearing Too Good

SIR—In your May 9 issue on page 54, I noted that it is stated that "Good material capable of 8,000 psi bearing exists . . ." This apparently should be 8,000 psf since 8,000 psi soil does not exist to my knowledge.

WILLIAM M. JONES
Bellaire, Texas

EDITOR'S NOTE—Mr. Jones is right. It should be 8,000 psf.

CALENDAR

International Conference of Building Officials, annual business meeting, St. Francis Hotel, San Francisco, Calif., Sept. 13-15.

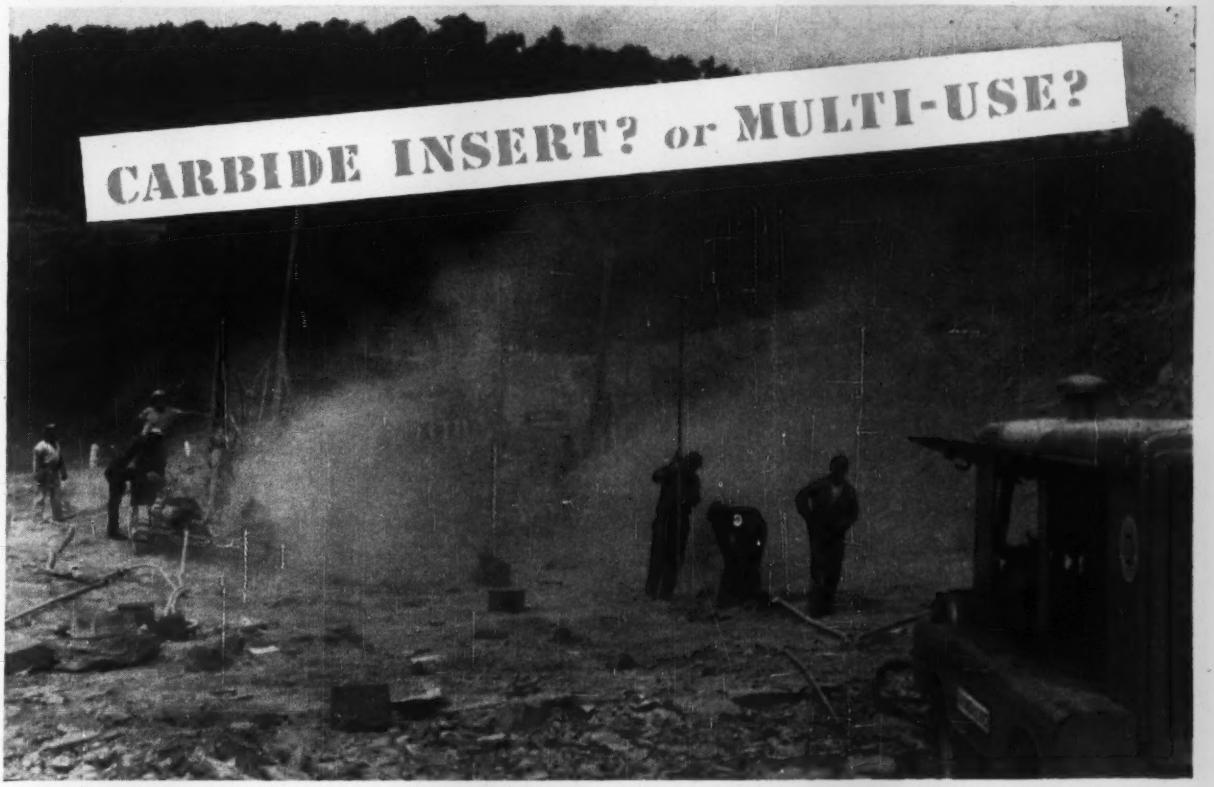
Building Research Institutes' Plastics Study Group, Washington University, St. Louis, Mo., Sept. 17-18.

Public Works Congress and Equipment Show, American Public Works Association, Grand Exhibition Hall, Philadelphia, Pa., Sept. 22-25.

Federation of Sewage & Industrial Wastes Associations, Hotel Statler, Boston, Mass., Oct. 7-10.

American Institute of Steel Construction, thirty-fifth annual meeting, Hotel del Coronado, Coronado, Calif., Oct. 7-10.

Society for Experimental Stress Analysis, annual meeting, Hotel El Cortez, San Diego, Calif., Oct. 9-11.



LOCATION: Route 40, Martins Mountain, Cumberland, Md. **OPERATING CONDITIONS:** Medium limestone.

The Bero Construction Corp. and the Via Company Inc. relocate Md. Route 40, cut drilling costs with TIMKEN® carbide insert bits

In relocating 2.4 miles of Route 40 at Martins Mountain east of Cumberland, Md., Via Company Inc. had to drill through limestone. To get maximum production, keep bit cost per foot-of-hole at a minimum, they used Timken® carbide insert bits.

For hard, abrasive ground, Timken carbide insert bits give you greatest economies. They permit faster drilling with fewer bit changes.

But carbide insert bits may not do the most economical job in every case. In ordinary, less abrasive ground, Timken multi-use bits save the most. When correctly controlled and reconditioned, Timken multi-use bits lower your cost per foot-of-hole when full increments of steel can be drilled out.

Both types of Timken bits save drilling time because they are interchangeable in the same thread series. They let you switch bits on the same drill steel as the ground changes, right on the job. And the special shoulder union of Timken bits protects against drilling impact, adds to bit life.

Timken rock bits are made from our own electric furnace fine alloy steel. We're the only American rock bit manufacturer that makes its own steel. Let our experts help you select the best bit type for your particular drilling job. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

your best bet for the best bit ...for every job

TIMKEN

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on approaches to Baltimore's new

Contractors on Approaches
using AmBridge I-Beam-Lok:

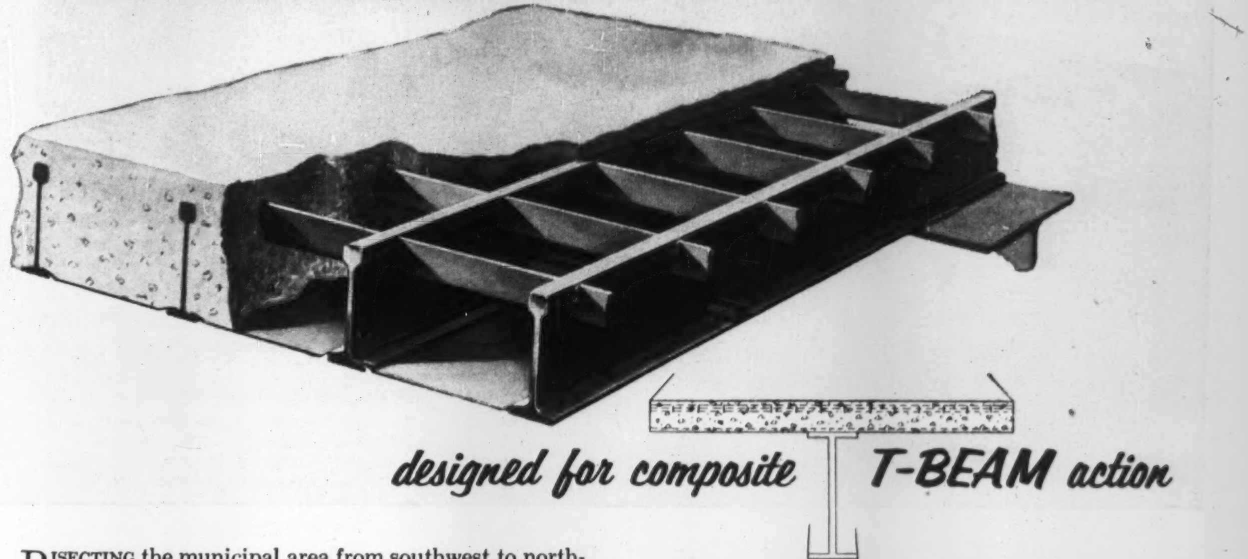
McLean Contracting Company	219,209 sq. ft. of I-Beam-Lok
C. J. Langenfelder and Son, Inc.	125,158 sq. ft. of I-Beam-Lok
Buckley & Company, Inc. (The Whiting-Turner Contracting Co., Sub-contractor)	157,692 sq. ft. of I-Beam-Lok
C. J. Langenfelder and Son, Inc. (The Whiting-Turner Contracting Co., Sub-contractor)	54,984 sq. ft. of I-Beam-Lok

Supervising Engineers for Project:
J. E. Greiner Company

Design Engineers for Approach Sections
using AmBridge I-Beam-Lok:
Louis Berger and Associates
Joseph K. Knoerle and Associates, Inc.
Rummel, Klepper and Kahl
Whitman, Requardt and Associates

Patapsco Tunnel—

557,043-sq.-ft. USS AMBRIDGE I-BEAM-LOK concrete-filled flooring



designed for composite T-BEAM action

BISECTING the municipal area from southwest to northeast, Baltimore's $130 million Patapsco Tunnel expressway is nearing completion.

Due to be opened before the end of 1957, this broad new 4-lane cross-town route runs 17.6 miles through congested waterfront and residential districts on viaducts and through a 7,650-ft. twin-tube tunnel deep beneath the busy harbor traffic of the estuary.

To take care of the heavy traffic this new expressway will get . . . and to hold weight and maintenance to a minimum, much of the roadway flooring on the approach viaducts is of the solid grid type—557,043 sq. ft. of which is USS AmBridge 4¼" I-BEAM-LOK concrete-filled flooring designed for composite T-Beam action. To provide still greater durability, a 2" blacktop wearing surface was applied to the ¾" concrete overfill.

The composite T-Beam action means that the floor slab (I-BEAM-LOK) and the supporting steel stringers are so welded together, making use of the 4¼" beams as shear connectors, that they cooperate as a single structural member in resisting some dead loads and all live loads. This saves a substantial amount of structural steel and facilitates erection.

The modern bridge flooring for today's heavy traffic

USS AmBridge 4¼" concrete-filled I-BEAM-LOK Flooring weighs only 58 lbs. psf. using a lightweight aggregate concrete with a ¾" overfill of regular concrete. Because of the strength of this lightweight floor, the supporting members can be spaced on 8' to 9' centers and still safely provide for H-20 loadings.

Completely fabricated units ready to install are delivered to the job site in the proper erection sequence. Top-side erection eliminates scaffolds and forms. And, since the pans are already installed, the concrete filler can be poured as the job progresses with little or no interference with other phases of construction.

Concrete-filled I-BEAM-LOK Flooring is available in 3" depth (weighing 47 lbs. psf.) as well as in the 4¼" depth (weighing 58 lbs. psf.). Open-type I-BEAM-LOK is available in 5" depth which weighs only 18.8 lbs. psf.

For detailed information about the advantages of this lightweight steel bridge flooring, contact the office nearest you, or write direct to Pittsburgh. Ask for a copy of our 32-page catalog.

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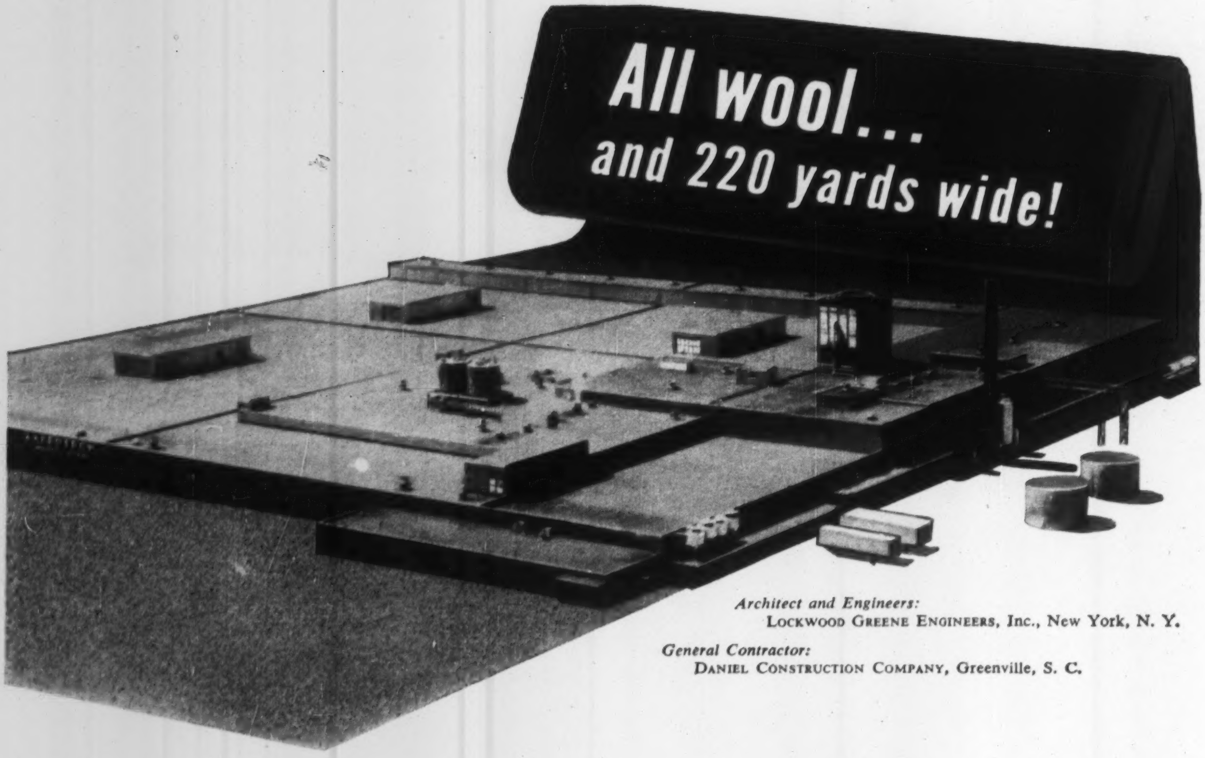
USS

USS AMBRIDGE I-BEAM-LOK BRIDGE FLOORING

UNITED STATES STEEL



Architect and Engineers:
Lockwood Greene Engineers, Inc., New York, N. Y.

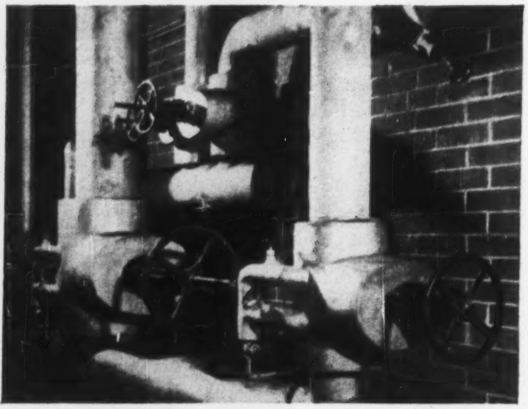
General Contractor:
Daniel Construction Company, Greenville, S. C.

Textron's first fully integrated woolen mill is equipped with **JENKINS VALVES**

The nation's largest woolen mill, with weaving, dyeing and finishing facilities all under one roof, occupies 430,000 square feet at Barnwell, S. C. This huge plant, operated by Amerotron Corporation, a Textron company, contains the most modern equipment that textile technology and modern engineering could provide. Utilizing U-shaped production flow, the Barnwell Mill achieves the utmost in economy of movement and handling of raw and finished materials.

The equipment for this ultra-modern, air conditioned plant was selected to match the efficiency and advanced concept of the building design. To control much of the complex piping system, Jenkins Valves were the unanimous choice of Textron's management and the engineers and contractor involved in this project.

Expectation of an extra measure of performance and economic service from Jenkins Valves has been universal among building experts and plant operating personnel for three generations. The symbol of this reputation is the famous Jenkins' Diamond and Signature trade-mark . . . and, moreover, the valves that bear it *cost no more.* Jenkins Bros., 100 Park Avenue, New York 17, N. Y.



Example of the wide variety of sizes and types of Jenkins Valves required to control the complex piping system of Textron's new Barnwell Mill.

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES
TRADE JENKINS MARK
SINCE 1864
Jenkins Bros

Sold Through Leading Distributors Everywhere

ENGINEERING NEWS-RECORD

Vol. 159, No. 8 August 22, 1957

Number of copies printed this issue: 78,907

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THE CONSTRUCTION WEEK

MOSES PROPOSES—Ubiquitous Robert Moses, New York City's man of many titles (and jobs), this week handed Mayor Robert F. Wagner a recommendation for construction of a $34 million low and middle income housing project south and west of Pennsylvania Station. As envisaged by the Committee on Slum Clearance (of which Mr. Moses is chairman), the project would cover a six block area between Eight and Ninth Avenues, between 23rd and 29th Streets. If it is approved, the project would add still more momentum to the nation's Title I program in which New York City has been both the brightest student—and the worst problem child. For other developments on the Title I scene, see page 21.

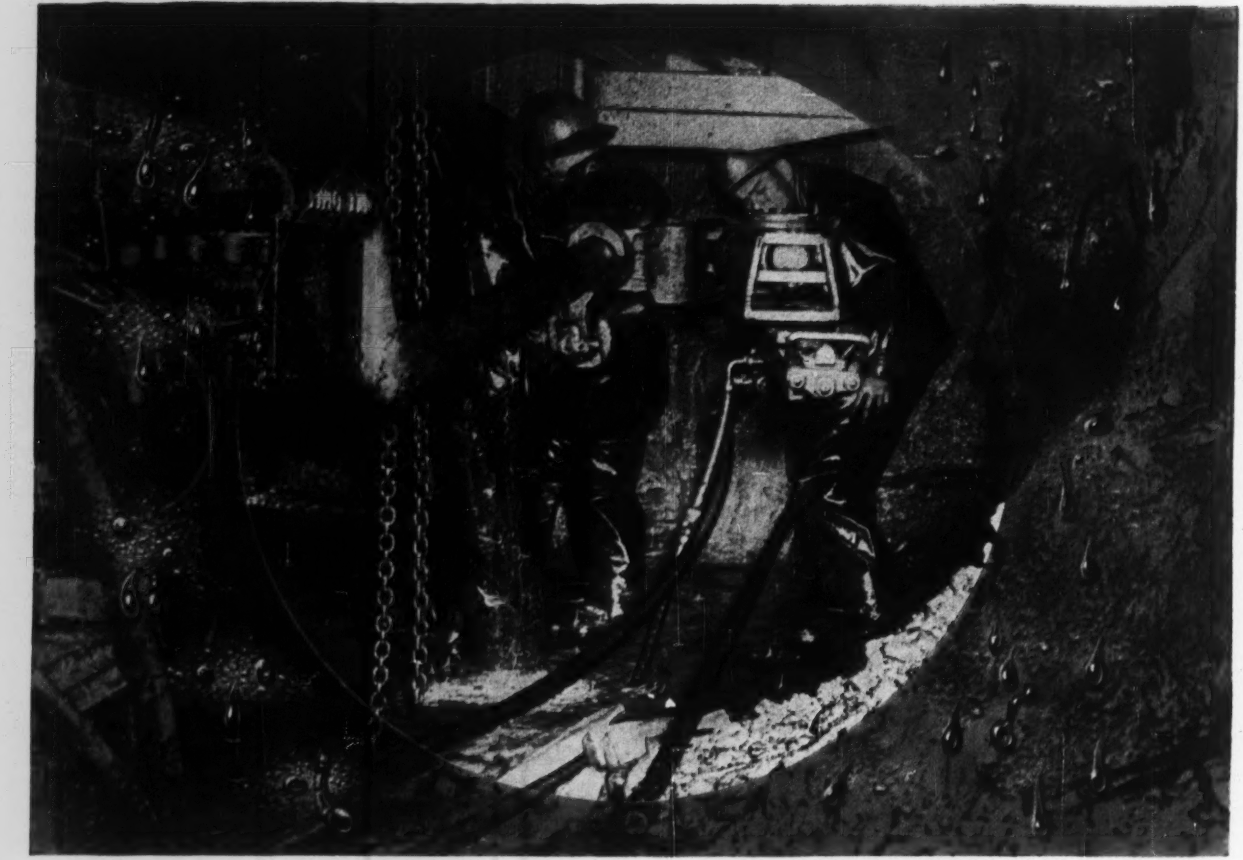
THREE-LANERS OUT—There'll be no more three-lane highways (with the middle one to "pile 'em up in") built in Pennsylvania. Last of the 2,216 miles of three-laners, started in 1955, has been completed. Henceforth, all such roads will be four lanes. Older roads will be converted to four lanes as funds permit.

GOUGERS BYPASSED—Kentucky has an answer to communities where local landowners try to get exorbitant prices for highway right-of-way: bypass the community altogether. Said Acting Governor H. L. Waterfield: "We're in the roadbuilding business, not the real estate business." He ordered state engineers to design bypasses where land prices seem too high. But he didn't specify how to determine when conditions warranting a bypass exist.

MADE IN JAPAN—British hydro equipment manufacturers may be giving their American counterparts trouble in the U.S. market, but apparently the tables are being turned on the British by the Japanese in India. The Japanese firm of Hitachi Ltd. is fabricating five 125,000 hp Francis turbines for installation in the powerhouse at Bhakra Dam. And another Japanese firm, Furukawa Electric Co., is negotiating with an Indian firm for a joint manufacturing facility. Moaned a British electrical manufacturer to an ENR correspondent in Bombay, "Japan with its competitive price could well oust us from the Indian market in another few years."

ALUMINUM BRIDGE PROSPECTS PERK UP—The Iowa Highway Commission has voted to have final plans drawn for an aluminum bridge. Crossing a four-lane highway now being built, it will have an estimated construction cost of about $127,000. Chances are good that some of the costs will be donated by aluminum companies.

AIR HOSE



It's the Air that keeps things moving!

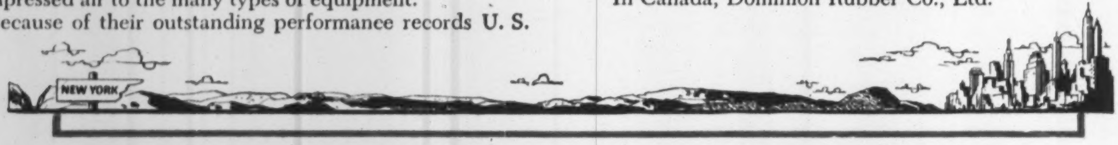
Deep under the Catskill mountains in Southern New York, thousands of feet of air hose snake along the wet, jagged rock passages of the West Delaware Tunnel project.

On this mammoth 160-million-dollar, 4-year construction job, everything below ground is run by compressed air (except, of course, the lighting). From muckers to exhaust fans, from suction pumps to jumbo drills, it's compressed air that *keeps things moving.* And every cubic foot of compressed air moves through U. S. Rubber Hose.

First, high-capacity U. S. Bull Line Hose carries the air to the working faces. Then, U. S. 4810 Air Hose moves the compressed air to the many types of equipment.

Because of their outstanding performance records U. S. Bull Line and U. S. 4810 Air Hose were selected by the several contractors involved. Both hose have covers of tough, pure-gum rubber to resist the severe abrasive conditions encountered. Both hose also feature neoprene tubes to combat action of oil in air lines. And between cover and tube, both Bull Line and 4810 have kink-resisting carcasses, each engineered for greatest hydrostatic values.

For all construction requirements, a complete line of rubber products—plus expert engineering assistance—is available at the 28 U. S. District Sales Offices, at selected distributors, or write us at Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.



U. S. RUBBER PRODUCTS AT WORK ON THE 44-MILE WEST DELAWARE TUNNEL

Mechanical Goods Division

United States Rubber

WASHINGTON OBSERVER

- **Economy drive quickens**
- **Bid shopping trouble again**
- **Coming up—an attack and an inquiry**

- **The Administration's effort to cut defense spending is firming.** The Pentagon has orders to bring spending in 1958 fiscal year to $38 billion, just under last year's total—and to do it by laying up ships, flying fewer flights, cutting manpower and stretching out construction needs.

The construction industry gets news, primarily, from two pieces of legislation that still were pending in Congress this week: the military construction authorization bill, and the first supplemental appropriations bill for fiscal '58. Here is the situation:

Long term, the authorization legislation is the better indicator. And House and Senate conferees are completing a compromise between the $1.41 billion the House voted, and the $1.20 billion the Senate authorized. You can expect a final figure of somewhere in between. That total will be considerably under the Administration's own pared-down request of $1.56 billion (originally, before the economy drive began, the Administration was going to seek $2.1 billion in new authorization for installations at home and abroad).

Short term, the appropriations govern money to be available in this year and next. The Administration wanted $1.65 billion. But the House cut to $1.47 billion, the Senate to $1.56 billion. Again, an in-between will be voted finally.

The consequences: Work on barracks and other base occupany will be cut back. Fewer men in uniform—at least 100,000 this year will result in replanning on installations. There will be deferment on most major defense bases, not a cancellation.

But the Defense Dept. wants stretchouts and replanning to cut the present $2 billion a year rate of spending cut by 10%—$200 million—between now and next June 30.

—

- **The long-pending anti-bid shopping bill is in a snarl again.** There is little chance of its being voted in this session of Congress. Chances were brighter than ever after the House passed the bill, but conflict among the specialty contractors has about convinced the Senate Judiciary Committee it shouldn't consider the legislation this year.

At issue: A limitation in the measure, which would require prime contractors to list their subcontractors in bidding on federal buildings. The National Association of Plumbing Contractors objects because the bill now limits the requirement to name subcontractors only on work to be done inside a five foot distance from the building. The contractors say the law should apply as well to utility extensions as far from the building as is necessary.

—

- **Keep an eye out for:** An attack on Secretary of Agriculture Ezra Benson by farm state Democrats. Their charge: Benson is taking over the decision-making function of David Hamil, administrator of the Rural Electrification Administration, on all REA loan applications of $500,000 or more.

An inquiry into the Spanish base construction by the Navy's Bureau of Yards and Docks. A House Government Operations subcommittee reportedly is looking into information about inefficiency and "boondoggling."

ONE OF A SERIES . . .

What makes Hyatts run smoother and longer?

CARBURIZED INNER RACES

From a fatigue life standpoint, the inner race is the critical member of a roller bearing, because the smaller area of contact between rollers and inner race concentrates the loads upon it. That's why HYATT goes to the added expense of *carburizing* every inner race—to assure you the performance and fitting advantages detailed at the right.

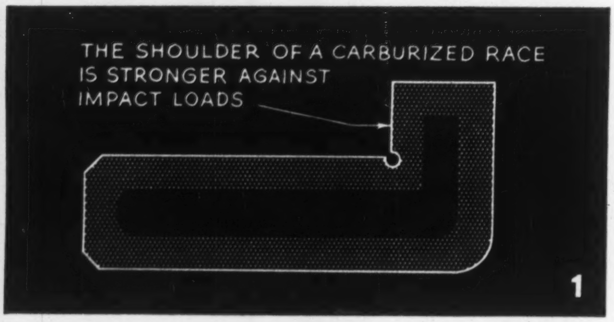
You will find full selection and application data in HYATT Catalog 150, or call your nearest HYATT Sales Engineer. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey. Sales offices at Harrison, Pittsburgh, Detroit, Chicago and Oakland, Cal.

HEAVIER INTERFERENCE FITS

Resistance to relative movement between inner race and shaft is vital to good performance. So HYATT makes practically all inner races of carburizing type nickel alloys instead of through-hardened steel. After carburizing and heat-treating, the outer surface has the hard wear resistance so necessary for an efficient bearing. The low-carbon core remains tough and ductile to permit much heavier interference fits than are otherwise possible.

TOUGHER FLANGES, GREATER LOAD CAPACITY

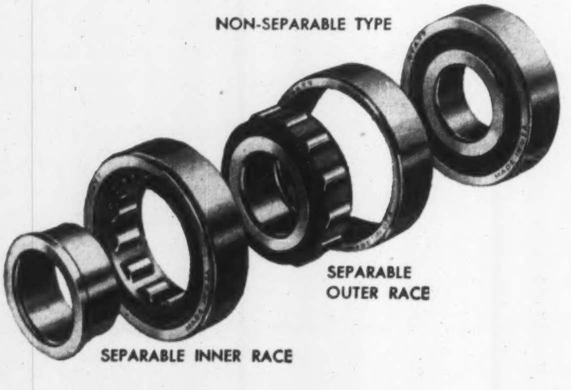
Carburizing also enables HYATT to obtain substantially tougher inner race flanges. Tests show the shoulders will withstand considerably greater impact loads (Figure 1). The carburizing process has also been found to increase the load-carrying capacity of the race by building up compressive hoop stresses in its external fibres during quenching.


THE SHOULDER OF A CARBURIZED RACE IS STRONGER AGAINST IMPACT LOADS

1

SIMPLER, LOWER-COST MOUNTING

Another advantage of HYATT'S heavier interference fits is the elimination of all auxiliary holding devices. When the carburized inner race is either pressed or shrunk on the shaft according to HYATT fitting recommendations, it becomes practically an integral part of the shaft itself. This permits mountings of the simplest type and lowest overall cost.



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FOR REPLACEMENT BEARINGS, SEE YOUR HYATT INDUSTRIAL BEARINGS DISTRIBUTOR

HYATT HY-ROLL BEARINGS FOR MODERN INDUSTRY

New backing for urban renewal could mean a . . .

Payoff on a $50 Billion Promise

Urban renewal, the once-magic phrase that promised the construction industry a $4 billion market for the short term and an eventual $50 billion market, remains a bright promise—on paper. For eight years, construction men have chased this multi-billion-dollar rainbow without finding the pot of gold. Only a handful of projects have been transformed from ideas on paper to brick and mortar on a site.

Why? Because bringing an urban renewal project into being is a monumental task. It takes years to advance a redevelopment plan from concept to consummation. That is the chief reason urban renewal has been dragging its feet.

For more than seven years, housing officials and planners found out again and again that money alone could not buy new housing to replace the slums that scarred the nation's cities, for slums are more than buildings beyond repair. Then, finally, when solutions developed for some of the problems of relocating people, meshing city ordinances and local practices with a set of federal rules, and finding private redevelopers, urban renewal found that for at least six months, even the money it needed was in jeopardy. The fair-haired baby was nearly abandoned on the White House steps.

Now, because of strong Congressional backing and a new stand by President Eisenhower, urban renewal and redevelopment may be on the path of progress, at last.

Despite its previous molasses-in-January's pace, despite administrative doubts, economy moves, red tape and rising costs, urban renewal now is coming closer to reality than at any time since Congress made the rebuilding of U. S. cities a matter of public policy for the first time in Title I of the National Housing Act of 1949.

Much of the current optimism about urban renewal stems from President Eisenhower's recent decision to restore the federal program to its full stature. The President not only has allocated as much for federal commitments this year as last but also has held out the possibility of further funds if needed.

The President's decision, announced to the cities by housing chief Albert M. Cole, gave fresh impetus to the program. Release of $250 million for commitment this year dispelled the first serious shadow that has fallen on the federal-local effort in the eight years since Congress voted to help the cities rebuild.

- **$40 billion or more**—Estimates of the long-term potential seem starry-eyed, ranging from $40 billion to $50 billion in new construction, most of it by private developers, only a small share by public bodies. But those close to the program argue that even such figures may be conservative for a program that will take a minimum of 25 years and could take up to 40 years to complete.

For the short term, the program obviously will be much smaller—but still impressive. Because of the way the program operates, private developers and local public agencies spend $4 to $5 in new construction for every dollar of federal grant money. And, with the latest funds voted, the Urban Renewal Administration now will have a total of about $1.15 billion in grants available, making the urban renewal market a $4 billion to $5 billion prospect for construction within the next year or 18 months.

Key to the success of the program is that it relies heavily on private capital rather than enormous government appropriations. Government assistance is limited to loans and grants that help the local public agency plan an urban renewal project, acquire and prepare the site, and finally sell it to developers.

The federal government's aid is felt most directly in the land acquisition phase. The city acquires the property and after razing existing slum structures, resells the property to private developers in a package. The city takes a substantial loss on this even though the cleared land is sold at "fair market value." But, the federal government, in turn, reimburses the city for two-thirds of the "loss."

This means that a city could spend

Man in the News

Victory Came Twice in 48 Hours

Albert M. Cole

Albert M. Cole, who has been housing chief since 1953, this month won two victories as an outspoken advocate of homebuilding and urban renewal.

Within a space of 48 hours; Mr. Cole succeeded in two key moves, one to save urban renewal, the other to step up the flow of private funds into FHA-insured mortgages for home construction.

These triumphs re-established Mr. Cole's standing as a spokesman for housing and urban redevelopment inside the Administration. The two victories showed that his words carry weight in the White House. They answered industry's doubts often expressed in the last year: "Sure, Cole fights for his programs in Administration councils, but does anybody listen?"

His sincerity and willingness to battle for his convictions never have been doubted. Nor has his eagerness to acquire new ideas. That was demonstrated during his service as chairman of the President's Advisory Committee on Housing Policies and Programs in 1953.

Mr. Cole's committee drafted the recommendations that became the basis of the Housing Act of 1954. One of the big changes expanded urban redevelopment from the slum clearance concept of 1949 into the all-inclusive objective of city-wide urban renewal.

. . . Urban renewal funds build up

$1 million acquiring and clearing a tract of slum land for resale to a private developer. If the "fair market value" (determined by an appraisal) is only $400,000, the city has taken a $600,000 loss. But, the Urban Renewal Administration will absorb two-thirds of the loss, in this example $400,000, leaving the city with an outlay of only $200,000.

This form of federal aid, which municipal officials consider indispensable, seems to have won acceptance as a long-range principle. In fact, there's a good chance that the federal government, within the next few years, will follow the cities' urging and absorb a greater share of the "write-down loss." Congress already has adopted some amendments that point in that direction.

• Program faced abandonment—Until the President released fresh funds two weeks ago, however, the urban renewal program had been at a standstill for six months. URA last February warned all local redevelopment agencies that its $900 million available at that time for grants was nearly gone and that allocation of funds would be rationed on a priority basis.

What was worse in the eyes of municipal officials, was the implied threat that the Administration intended to abandon the program. This fear was strengthened by White House failure to release additional funds previously authorized and by reluctance of the Administration to stand by its original budget request of $250 million more for urban renewal in fiscal 1958. In fact, the Administration trimmed this request, under pressure of the economy drive, to $175 million.

Congress settled the budget issue last month, however, by authorizing $350 million more for urban renewal—with no fiscal time limit. Sensing the mood of the lawmakers, the Administration reversed itself again, told Congress that the original $250 million requested would be acceptable.

At the end of the 1957 fiscal year on June 30, the URA, a constituent unit of the Housing and Home Finance Agency (HHFA), had made commitments (fund reservations) for 435 specific projects totaling $896 million. That left only $4 million uncommitted of the $900 million actually available at the time.

The President, however, had at his disposal another $100 million that had been consigned to his personal discretion under the Housing Act of 1954. It was this added $100 million that municipal and redevelopment officials pleaded with Eisenhower to use when URA almost ran out of money in February.

With the $350 million recently voted by Congress, the President now has a total of $450 million of uncommitted urban renewal funds at his command. The $250 million that the President has authorized to be used for new commitments will enable URA quickly to build up its total of earmarked grants to $1.15 billion.

This $1.15 billion will make possible construction expenditures totaling close to $5 billion on more than 450 project sites.

More than $250 million of new grant funds will be needed to handle project applications this year. In March, after URA began to ration its funds, 174 cities in 26 states reported to the National Association of Housing and Redevelopment Officials (NAHRO) that they would need $676 million in new grant allocations by June 30 of next year. Of this total, $201 million in applications for new projects already had been submitted to HHFA regional offices. Another $126 million was needed for additional grants to projects already under way and nearly $350 million was estimated as the amount needed to cover projects to be started by mid-1958.

• Slow start—Federal officials such as Mr. Cole and URA Commissioner Richard L. Steiner have had some trouble maintaining interest in urban renewal (and getting funds for it) because the program for a long time had little to show in brick and mortar.

—Federal Grants to Urban Renewal Projects—

(In millions of dollars)

At end of calendar year	Grant funds authorized by law	Funds released for commitment	Funds committed to specific projects
1949	$500	$100	......
1950	500	200	$213.6
1951	500	300	298.9
1952	500	400	343.0
1953	500	500	358.5
1954	500	500	379.9
1955	800	700	560.1
1956	1,000	900	837.6
1957 (June 30)	1,350	1,100	895.6

Now, however, scores of urban renewal projects are nearing or have reached the stage of construction contract awards by redevelopers (see table on facing page). Even eight months ago, at the end of 1956, construction of industrial, commercial and residential buildings actually was under way or completed by redevelopers on 26 projects in 15 cities: Chicago and Robbins, Ill.; Baltimore; Detroit; Manchester, N. H.; Jersey City and Perth Amboy, N. J.; New York and Port Chester, N. Y.; Philadelphia; Providence; Knoxville; Danville and Norfolk, Va.; and Aibonito, Puerto Rico.

This activity at the end of 1956 represented a substantial gain over the tally a year earlier, when redevelopers had construction in progress or completed on 17 projects in nine cities.

And some cities have told Mr. Steiner that they expect to make speed on concrete accomplishments. Philadelphia, for example, has an offer from a private redeveloper to complete all construction in three years on the city's entire 2,600 acre Eastwick project, which will use Delaware River silt for landfill. Preliminary planning of this project has been approved for nearly six years, however, with a $22 million grant commitment.

Nashville similarly has reported a five-year construction schedule for its 2,200 acre East Nashville project, approved last November by HHFA for preliminary planning, with a grant allotment of $11.7 million.

For overall drive in promoting and pushing their urban renewal projects, New Haven and Norfolk generally are given top ranking in their population bracket. Among eastern and midwestern cities with strong programs are Cleveland, Cincinnati, Detroit, Pittsburgh, Kansas City, Mo., Chicago, Philadelphia, Nashville, St. Paul, Minneapolis and Milwaukee.

Baltimore recently brought out a monumental report assessing urban renewal needs, and the city now is reorganizing and consolidating its redevelopment authority to tackle the big task.

Washington, D. C., has approval of an outstanding large-scale redevelopment plan for its 3,300 acre southwest project. But the city has fiddled around for four years since demolition began on its 1,100 acre Area B project in the same section.

New York, where Robert Moses dictates and carries out urban redevelopment with a small staff, is unique among U. S. cities enrolled in the program. Washington officials have been lenient about letting the New York czar go his own way, as evident in the recent settlement of the dispute over the Lincoln Square project, to which HHFA has committed nearly $25 million of grant funds.

On New York renewal sites, HHFA has even allowed Mr. Moses to turn occupied properties over to private redevelopers who contract to relocate the displaced families and businesses before demolishing the structures for rebuilding of the site. But the federal government in the near future is likely to press New York harder on this exceptional practice.

Mr. Moses has told his friends that his real reason for this procedure is that the city's Board of Estimate will not approve new projects until he has a firm contract with the redeveloper in hand. Federal officials view his arguments skeptically, especially because Mr. Moses never has tried the normal procedure used by other cities.

Whatever the outcome, Washington won't try to tell New York or any other city how the local government must plan and execute its urban renewal program. Control of the local program rests with the cities.

Cities of the West and Southwest are moving strongly into urban renewal. Some authorities expect California localities to make their state a leading participant in the program within the next 18 months or so. A number of California cities are now working on proposed projects.

Texas, which just recently enacted enabling legislation, has some 30 cities that are eager to get local projects going, provided federal grant commitments can be obtained. The same is true in the state of Washington where about five cities want to start projects.

Among the laggards, Boston needs urban renewal as badly as any city in the nation but has been notably slow in getting a rounded program rolling. Only one of three projects approved seven years ago has advanced to the execution stage. Boston, however, is planning a 15 year rebuilding program that will require some $200 million of federal assistance and $60 million of city funds.

• More than housing—Industrial and commercial rebuilding of deteriorated areas is a critically important component of projects under way in many cities. These aspects of urban renewal loom large in a breakdown of 234 projects that had moved into "final planning" or "execution" at yearend.

Of 6,335 acres of net redevelopment area, exclusive of streets, in these 234 projects, nearly 1,150 acres are being redeveloped industrially, and more than 1,000 acres commercially. Public and semi-public buildings are to take less than 650 acres of the total net area. Housing accounts for the remainder, slightly more than 3,500 acres.

These 234 projects give a good measure of the relative uses that may be expected to prevail in the continuing national program under present law. The land-use ratio for the 234 well-advanced projects is 18% industrial redevelopment, 16% commercial, 10% public, and 56% residential.

Big industrial and commercial firms have taken hold of redevelopment on a number of sites, as a glance at the names of some major redevelopers quickly shows. The International Shoe Co. (Florsheim) and the Robert W. Hunt Co. (engineer testing laboratories) are redeveloping the West Central industrial project in Chicago; Lever Brothers (soap) is doing the Rogers block project in Cambridge, Mass.; the Scott Paper Co. has the Bethel Court project in Chester, Pa.; and Sears, Roebuck is redeveloping project sites in Danville, Va., and Port Huron, Mich.

Among other major redevelopers are Webb and Knapp, Bill Zeckendorf's big real estate firm, which has three projects under way: West Park in New York City, the Southwest Project in Washington, D. C., and Laurel-Richmond in Cincinnati; New York Life, building 2,000 apartments and 17 acres of commercial properties on Chicago's big Lake Meadows project; and Ferd Kramer, in the same city, putting 1,200 dwelling units on the Michael Reese Hospital project.

Other outstanding redevelopers are Stevens and Scheuer, finally assured FHA mortgage financing for more than 1,000 dwelling units on Washington's long-delayed Area B development, which also includes more than 5 acres for industrial use; Garden Valley Homes, building 480 houses on a project of the same name in Cleveland.

Despite the impressive list of prepared projects and ready redevelopers, the program to date actually has cost the federal government very little.

• Cash outlays small—Actual federal payouts on grant contracts have been small to date. In a sense, spokesmen for the American Municipal Association and the U.S. Conference of Mayors, as well as for NAHRO, belittled their pet program somewhat during this year's fight when they pointed out that only $75 million had been expended of the $1 billion previously authorized by Congress. They used that fact to show that a big additional authorization for fiscal 1958 would cost the government next to nothing in actual cash outlay.

What really burned the municipal officials, however, were the instructions that went out to all local redevelopment agencies in Mr. Steiner's fund-rationing letter of March 6, one month after URA first informed the localities of the priority system set up to husband the dwindling supply of funds. As promised in the March letter, the instructions have now been rescinded with the release of additional funds.

Mayors and local officials bridled at the implication in the letter that HHFA was going to make the decisions as to what kind and size of projects a city would undertake. Municipal officials quickly told Messrs. Cole and Steiner, and Congressional committees that the instructions infringed on local responsibilities and powers that Congress had plainly assigned to the localities—first in the original slum clearance and urban

Urban Renewal Scoreboard

(Three-year trend of projects nearing construction stage)

Project activity	Number of projects as of 6/30/57	as of 6/30/56	as of 6/30/55
Land acquisition:			
Started	129	104	87
Completed	62	45	29
Relocation of displaced people:			
Started	125	100	77
Completed	56	35	18
Clearing site:			
Started	116	90	72
Completed	44	26	18
Construction of streets and utilities:			
Started	52	29	14
Completed	18	9	8
Construction of public buildings:			
Started	40	24	17
Completed	20	12	4
Disposal of land to redevelopers:			
Started	48	29	25
Completed	17	14	13

. . . Greater local power is requested

redevelopment law of 1949 and again in the broad urban renewal amendments of 1954 that expanded the program into a city-wide attack on slums, blight and general deterioration of real estate values.

One of the sore points for the cities last March was the statement in Mr. Steiner's letter that HHFA would prod them to trim the size of large projects now being planned or to divide the areas into several parts in an effort to get one sound smaller project for a starter. This proposal contravened the intent of Congress in the 1954 law, the cities said.

The 1954 provisions call for a broad attack on big areas by the cities themselves, entirely on their own initiative and responsibility, they pointed out. HHFA's new directive would wreck plans under way for projects embracing up to 2,500 acres or more.

Mr. Steiner had strong counter arguments. With available funds reduced to $33 million at the beginning of February, some new rules had to be laid down for utilizing the money to best advantage. He said that HHFA in the preceding seven months had approved for survey and planning 17 big projects, each more than 200 acres in size. Grant commitments to these 17 projects tied up $81 million of funds. He wondered whether URA had followed the best policy in earmarking so much money for big jobs. The measure of URA success in administering the program, the URA commissioner says, is the amount and quality of the projects that localities themselves develop and consummate. HHFA needs more evidence of local accomplishment to take to Congress if the agency is to secure continuing support for the program.

- **Priorities**—On that basis priority rules were set up last February to push projects into the execution stage—the assembly and resale of land. On June 30, URA was able to report its most successful year to date, with 76 projects advanced to execution, as compared with 26 in each of the two preceding years.

For the emergency that existed then, municipal officials had no objection to the priority system imposed: (1) Increases in existing grant contracts where needed, (2) increases in grant reservations found necessary when a locality applies formally for loan and grant contracts, and (3) grant reservations for projects in disaster areas.

With $250 million of new funds now available, these priority rules are now in abeyance. But it is plainly evident that HHFA has to propound a new set of priority standards. There isn't enough money released or requested to permit the agency to pass out commitments on a come-one come-all basis.

Big question, of course, is the shape of the rules to come. They will be much less stringent than the emergency standards, but they will be tight enough to screen the nearly $700 million of applications on hand or anticipated.

Whatever rules are drafted, it is obvious already to HHFA officials that $250 million won't last beyond a few months. More commitment funds will be needed to carry the program to June 30 of next year.

What still worries urban renewal people is the effect of the six-month setback on local projects. A tremendous amount of interest and energy has to be generated by local public officials, businessmen and civic leaders before a project can even be initiated: That is, developed to a stage where the locality can apply to Washington for a planning loan or a grant commitment. This enthusiasm has to be maintained and increased during later stages if the project is ever to go into execution.

During the six months of uncertainty city officials almost universally have reported a steep slump in local interest and optimism regarding "grand plans" for rebuilding. The cities not only lost momentum on their urban renewal; they also lost industries and businesses whose managers gave up their hopes for redeveloped industrial and commercial areas and made the decision to move elsewhere. That, municipal officials say, is why they have been so worried about the federal program.

Now they wonder if the lost enthusiasm can be regained and, along with it, the skilled staff people who saw only a doubtful future for local urban renewal plans. If the new federal controls are flexible enough to let local plans move ahead freely, officials hope that much of the ground can be recovered.

- **Broader powers needed**—U. S. cities need greater latitude than the law now allows for redeveloping decrepit industrial and commercial districts, the mayors and local officials keep telling Congress. Decline of these areas is costing the cities dearly in loss of businesses, skilled workers and taxable values, they point out.

Present law permits federal assistance if a project site contains a substantial blighted residential area—interpreted by HHFA as 20% of the total. This year's amendments raised from 10% to 12½% the percentage of federal grant funds that can be used for projects of this kind.

But the cities want wider powers to attack run-down districts that contain little or no residential property. They would like to replace these obsolete areas with modern redevelopments such as industrial parks. Only in that way can they hold their skilled population and maintain their tax base.

Other amendments the cities are urging upon Congress would: (1) Enable a municipality to borrow federal money for early acquisition of property and (2) allow the city—through a private holding company if not the city's redevelopment agency—to hold cleared land until the real estate market permits a favorable sale. These improvements would help the cities clear two of the toughest hurdles in carrying out urban renewal projects

Explosion in Tunnel

Blast at Oswego, N. Y., Kills 4 Workers

An explosion in a tunnel beneath Lake Ontario in Oswego, N. Y., on Sunday, August 18 at about 2 pm killed three construction workers. A fourth person, who had been among the rescuers, died a short time afterward of gas poisoning.

As ENR went to press Monday evening, the tunnel was still full of noxious fumes, so investigators, even with gas masks, had not been able to determine the cause of the blast.

The rock tunnel, 6,250 ft long and 8 ft in dia, had been driven as part of a new water supply for the city of Oswego. It connected a shaft on shore with an intake riser in Lake Ontario. Tunnel and riser had been completed except for an 18 ft thick 15 ft dia rock plug on the riser.

The plug was to be blasted away thereby flooding the tunnel. Then an intake crib, fabricated on shore, would be floated to and set in its final location.

Prior to last Sunday, miners had drilled blast holes in the plug and packed them with dynamite. Two interconnected lines of Primacord had been run from the plug through the tunnel to the top of the shaft on shore, according to reports.

The three men killed in the explosion were reported to have been in the tunnel setting "booster" charges—a half stick of dynamite—along the Primacord every 1,000 ft. These charges were used to help insure that the Primacord would explode through to the plug.

The dead men were found by rescuers about 4,600 ft from shore. There was no water in the tunnel after the explosion, indicating that the plug was intact.

General contractor on the job is Herbert F. Darling, Williamsville, N. Y.

Pan-Am Highways

Mexico urges U. S. aid for road south of Panama

A proposal that the U. S. pay the lion's share of the cost of financing extension of the Inter-American Highway beyond the Panama Canal Zone to Colombia emerged this week as the most important action of the Pan-American Highway Congress.

The ten-day-long Seventh Highway Congress wound up its sessions at Panama City, after the more than 400 delegates re-elected Mexico's Romulo O'Farrill to head the Permanent Directive Committee, which carries out the mandates of the Congress in the 3-year intervals between its sessions. Next session will be held at Bogota, Colombia, in 1960.

The financing proposal, advanced by Mexico, would call for closing the so-called "Darien gap" in the highway which now separates North and South America. According to Tomas Guardia, Jr., Panamanian engineer, "no basic engineering problems exist" in connecting the present highway in Panama with the Colombian highway system. However, Mr. Guardia estimated that engineering studies to cost about $1.4 million must still be made, and added that the road itself would cost a "maximum" of about $100 million.

Following this report, the Mexican proposal suggested that the United States contribute two-thirds of the cost of additional studies; Panama and Colombia two-ninths each, and other hemisphere countries one-ninth each.

However, Bertram D. Tallamy, U. S. Highway Administrator who was chairman of the U. S. delegation to the meetings, emphasized in an interview that "the United States has gone along with two-thirds financing on the Inter-American Highway, but Congress has gone no further than the canal. It should be stressed that Mexico's formula is a suggestion only, and no country is committed to it."

More than 50 other resolutions were approved and passed on to the Directive Committee. Other committee members, besides Mexico, are Argentina, Brazil, Chile, Colombia, United States, Panama, Peru and Venezuela.

Samuel F. Beatty, Sr. Dies; Pioneer in Road Equipment

The death last week in Hinsdale, Ill., of Samuel F. Beatty, Sr., at the age of 78 ended a career that had encompassed and influenced the entire history of roadbuilding with mechanical equipment. Mr. Beatty went to work for the Austin-Western Road Machinery Co. in 1899, and became president of the company in 1927. He retired in 1942.

Active in the formation and operation of the American Road Builders Association, Mr. Beatty served two years as president of its manufacturers division, then known as Highway Industries, Inc., and the forerunner of the present Construction Industry Manufacturers Association

To Conserve Water

Milwaukee moves to check waste of cooling water

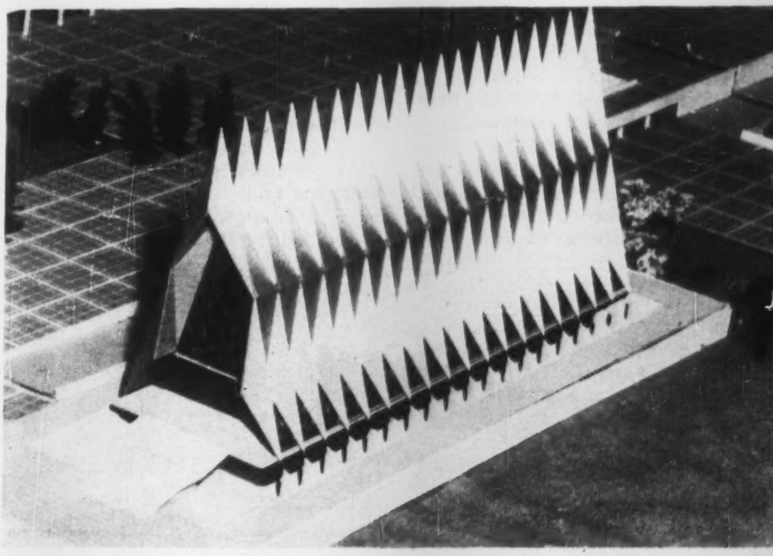
Milwaukee is the latest of a growing number of cities moving to check the non-conserved use of air conditioner cooling water by introducing a flat "demand" charge in addition to regular water rates. The city has asked the Wisconsin Public Service Commission for permission to levy the charge.

Corresponding to the demand charge levied by electric utilities on larger customers, Milwaukee would collect $20 a year for each ton of refrigeration capacity above three tons, in addition to water consumption bills. The idea is not really to collect money, but rather to encourage the use of cooling towers or other water conservation devices in conjunction with larger air conditioning installations.

Justification for the procedure, according to city water engineers, is that the city is losing between $17 and $26 a year for each ton of air conditioning supplied with non-conserved cooling water. This is because heaviest demand for cooling water comes on top of already high summertime peak demands, thus necessitating an increase in treatment and distribution system capacity. But cooling water is consumed only for a few months during the summer and charges for total consumption hardly begin to pay for the added fixed plant required, says the city water department. And Milwaukee's present water rates are not high enough to make installation of cooling towers by users a paying proposition.

Air conditioning manufacturers are opposing the city's request to the PSC. The hearing will resume Sept. 9.

A detailed description of Chicago's predicament involving a similar situation was given in ENR, April 4, p. 33.



House Approves Air Force Chapel Design

The House of Representatives, after first rejecting the proposed design for the chapel of the Air Force Academy at Colorado Springs, Colo., last week approved funds for the structure.

The chapel, designed by Skidmore, Owings & Merrill, Chicago, is in reality three separate chapels in one building. Enclosed within a series of fin-like arches made up of connecting tetrahedrons, are a 900 seat Protestant chapel and at a lower level, a 500 seat Catholic chapel and a 100 seat Jewish chapel.

The exterior consists of tetrahedrons made of aluminum panels insulated on the exterior and perforated on the lower portion of the interior for sound damping. The panels will be supported on pipe sections.

The building is 125 ft high, 280 ft long and 84 ft wide between abutments.

Though the design has not been finalized, the architects say there will be no basic changes in the design.

The Senate has not yet voted the necessary construction funds.

Money No Problem for Roadbuilders

ARBA task force says credit will be available for big federal highway program, but distributors worry

The American Road Builders Association has been told that financing presents no serious problem to builders of the $100 billion of highway construction contemplated in the next 15 years. Specifically, no branch of the roadbuilding team except the equipment distributors foresees any credit stringency that might limit capacity and performance of its function in carrying on the big program.

A special task force of the ARBA gave this encouraging forecast of adequate financial resources last week in a report on credit problems of the highway industry. No lack of funds was foreseen by any one of six coordinate members of the roadbuilding complex: (1) the state highway departments, (2) the contractors, (3) the bonding companies, (4) the equipment manufacturers, (5) the materials producers, or (6) the financing companies and commercial banks.

• Distributors have problems—For the equipment distributors, however, a subcommittee headed by Paul Reinhold of Pittsburgh had a different story to tell. The distributors can see themselves called upon to finance $100 million to $180 million of used equipment each year in the five-year period 1958-62, as the highway program gears up to maximum construction volume. This credit load is more than distributors in general have the financial capacity to carry.

The distributors have no solution to their special credit problem. Neither has anybody else. In fact, the subcommittee report of the financing companies, headed by S. D. Maddock, who is chairman of the C. I. T. Corp.'s executive committee, adds a point to one of the difficulties discussed by Mr. Reinhold's group.

As the program expands, the distributors say, equipment sales to contractors may be expected to require more frequent co-signing of the purchaser's equipment financing contract by the contractor. This co-signing makes the distributor liable for any default in payments by the contractor and puts a further strain on the distributor's credit.

Equipment trade-ins of $100 million to $180 million a year are estimated by the distributors on the basis of $500 to $600 million annually of new machinery sales foreseen by the manufacturers of roadbuilding equipment. Mr. Reinhold's subcommittee points out that used construction equipment has little collateral value.

As a result of these conditions, a large stock of slow-moving used equipment curtails the distributor's credit. When they reach their credit ceiling, the distributors state, their "sales will be limited to cash sales and sales with recourse."

• The problems are peculiar—Manufacturers and other branches of the industry face no such perplexing problems, according to the subcommittee report. The manufacturers, for example, have ample credit to carry both raw material inventories and "floor plan financing" of equipment in distributors' showrooms.

With a little care, the other members of the team will be able to finance all their activities. This opinion applies even to states that have to increase user taxes or sell bond issues to obtain matching funds for their federally aided highway construction.

Bids Kill Record

Record prestressed span out; steel takes low bid

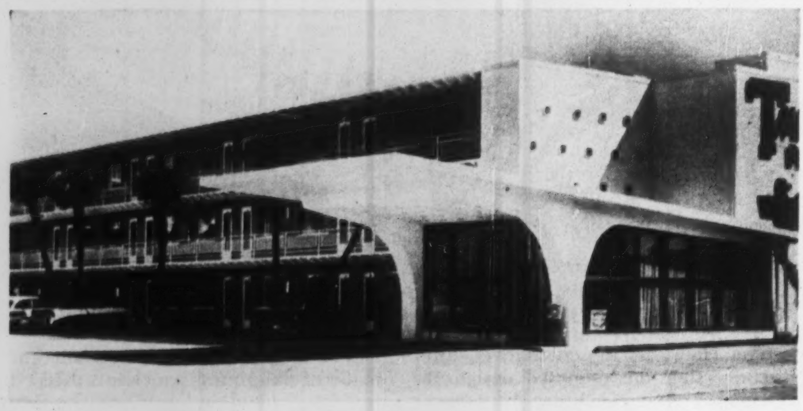
Prestressed concrete is getting tough competition from structural steel for medium span bridges. All three bidders on the Nisqually Glacier bridge bid steel lower than prestressed concrete. Had prestressed concrete been low, the 300 ft span bridge would have been the longest span prestressed bridge in the U. S. (ENR Aug. 8, p. 25).

Low bidder at the Aug. 16 bid opening held in the Bureau of Public Roads offices in Portland, Ore., was Carl M. Halvorson, Inc. of Portland, who bid $1,165,836 for the steel structure and $1,243,280 for the prestressed concrete structure.

Only two other bidders completed a disappointing response. S. S. Mullin, Inc. of Seattle was second with a steel bridge bid of $1,297,180 and Peter Kiewit Sons Co. was high with a comparable figure of $1,412,465.

Key to Halvorson's low bid was a 31 cents a pound bid on carbon structural steel and a 32 cents a pound bid on low alloy steel. Mullin bid 37 cents a pound on both these items and Kiewit bid 45 cents. Total dollars in these two items in the Halvorson bid is $529,056. While it is not directly comparable, Halvorson's $561,000 bid on the prestressed superstructure is indicative of the difference between steel and prestressed concrete.

The Bureau of Public Roads now takes the bidding under advisement—their estimate was not revealed. They could yet award in prestressed concrete on the basis of lower maintenance.

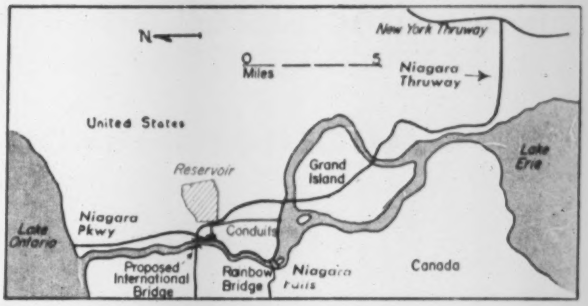


T-Slab Cantilevers Form Motel Balconies

Floor and roof construction of the new 3 story Thunderbird Motel at Daytona Beach, Fla., consists of prestressed double "tee" slabs cantilevered beyond the building line to form balconies outside rooms on the second and third floors. The tees span 20 ft and cantilever 5 ft on the sides of the building. The slabs provide over 24,000 sq ft of floor and roof area.

A. Kemmerer was the architect, and William Kovash, the builder. Slabs were produced by Perma-Stress, Inc., Daytona Beach, on forms supplied by Food Machinery & Chemical Corp., Lakeland, Fla.

Power Authority of State of New York lets first contract for $600 million at 2.2 million kilowatt development as . . .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Lake Ontario
Conduits
Proposed International Bridge
Rainbow Bridge
Niagara Falls
Canada

Congress Approves Niagara Project

The Niagara Power Project became a reality last week as Congress approved its construction by the Power Authority of the State of New York. Just hours afterward, PASNY Chairman Robert Moses announced the first contract award, a record $20.7 million for the main powerplant's turbines.

President Eisenhower still has to sign the bill and the Federal Power Commission must license the project. But these actions are regarded as foregone conclusions. The Senate last week okayed a bill identical to the House bill, passed August 1, rejecting amendments that would allocate to neighboring states more than the stipulated 10% of power production.

The huge project, to provide 2.19 million kw installed generator capacity for an estimated $600 million, is also destined to be a speedily constructed one. Two days after the turbine letting, generator bids were received and plans for the main powerhouse, at Lewiston, were released to bidders. PASNY hopes to break ground shortly after award of the powerplant contract, scheduled for November. All major equipment and construction contracts are to be awarded by the end of this year or shortly thereafter. Niagara is to be on the line in the spring of 1960, just 30 months after groundbreaking.

• Engineering triumph—During the heat of the seven-year political battle among federal, state and private power interests over who was going to develop water power at Niagara Falls, the project's remarkable dimensions became all but lost in the shuffle.

Its powerhouse will rank with Grand Coulee's as the largest hydro installation in the Western Hemisphere. Whether Niagara will be larger or smaller depends on what factor is chosen for comparison—firm kw (less), installed kw (more) or turbine hp (less).

Construction at Niagara will not be as spectacular as at its sister development on the St. Lawrence River in that no dams, with consequent pushing around of rivers, are involved. But the estimated 30 million cu yd of rock excavation in cuts more than 100 ft deep, for the water-carrying conduits around Niagara Falls, are figures to be reckoned with. This phase of the work is expected to control construction speed.

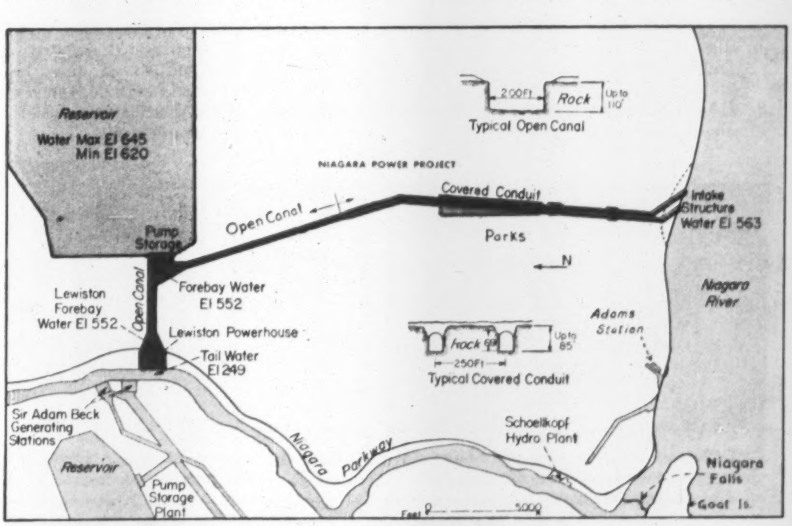
• Design—Basic elements of the Niagara project are (as shown on the drawing) an intake structure on the U. S. side of the river above the Falls, 4 miles of covered conduit (through the city of Niagara Falls), open unlined canal leading to the forebay of a pumped storage plan, plus 1 mile of open canal terminating in the forebay of the cliff side Lewiston powerplant. The development will capture all but 1 ft of the 315 ft difference in water levels between Lakes Erie and Ontario.

The intake has been designed as a heavy skimmer wall on concrete piers. It will have a wide mouth with resultant low entrance velocity so that floating ice will tend to move away from the wall with the main current. Dredging of channels from mid-river to the intake area and away from the area to facilitate ice movement will be a feature of intake construction.

After lengthy consideration of three schemes to carry water to the power plant—deep rock tunnels, covered conduit and a combination of open canal and covered conduit—Niagara's designers determined that the combination was the least expensive method, some $105 million cheaper to construct than tunnels. Capacity of the almost flat aqueduct will be 83,000 cu ft per sec (cfs) under a velocity of 14 ft per sec (fps). Studies have shown that an unlined canal will be most economical, provided the rock is as solid as borings indicate. If so, canal bottom and sides will require no special finishing treatment beyond carefully controlled blasting procedures similar to those that Canadian constructors used across the river for the Sir Adam Beck canals.

• Pumped storage scheme—The pumped storage plant, of outdoor type, will house 12 generator-motor units and a like number of pump-turbines. The former will each be rated at 20,000 kw as generators and 28,000 kw as motors. Pump-turbines will each have a ca-

(Continued on page 30)


Reservoir
Water Max El 645
Min El 620
NIAGARA POWER PROJECT
200Ft
Rock
Up to 110'
Typical Open Canal
Open Canal
Covered Conduit
Intake Structure
Water El 563
Pump Storage
Parks
N
Forebay Water
El 552
Lewiston Forebay Water El 552
Open Canal
Lewiston Powerhouse
Tail Water
El 249
Rock
Up to 85'
250Ft
Typical Covered Conduit
Adams Station
Niagara River
Sir Adam Beck Generating Stations
Reservoir
Pump Storage Plant
Niagara Parkway
Schoellkopf Hydro Plant
Niagara Falls
Goat Is.
Feet 0 5000

MAJOR ELEMENTS at Niagara are intake above Falls, 5 miles of aqueduct in rock, 240,000 kw pumped storage plant and 1.95 million kw powerhouse below the Falls.

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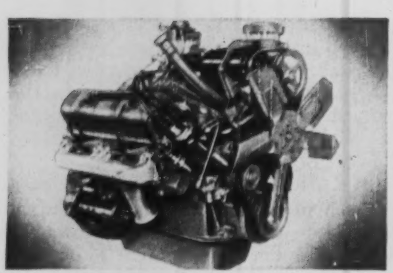
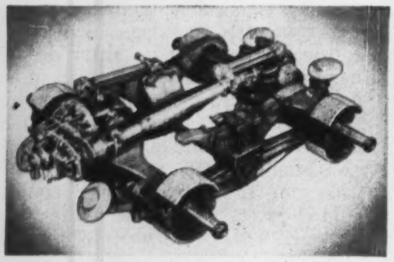
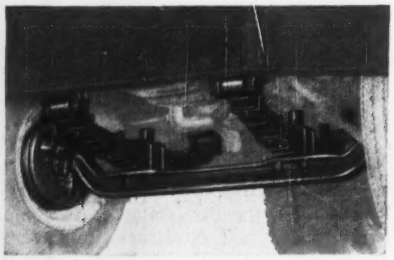


1 **Most V-8 power in any truck,** 257 hp. New Heavy-duty VF-230 models have load-moving ability unlimited, power to haul the biggest loads. Other six-wheeler engines include sixes and new V-8's—gasoline, LPG and diesels up to 356 hp.

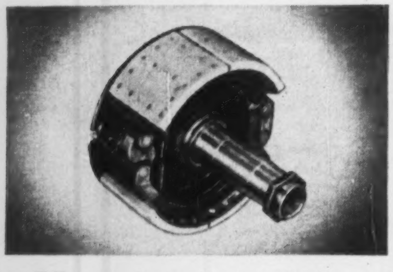


2 **INTERNATIONAL tandems** give longer, more dependable life. This heavy-duty, double reduction unit has 50,000 lbs. capacity. Sturdy cast steel housings. Third differential with lock transmits power smoothly and evenly to each axle.

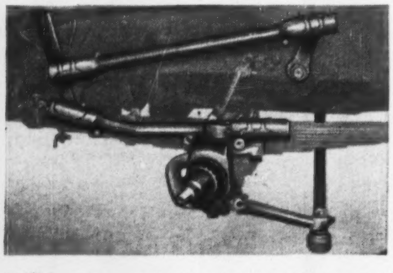


3 **Balanced heavy-duty front end** for maximum loading, added stability and longer life. 15,000 lbs. capacity heat-treated high carbon steel axle, 4-inch wide springs, threaded pins and bushings. Built to take the big jobs in stride.

4 **INTERNATIONAL steel-flex frames** combine great strength with proper flexibility. New models have deep, double channels made of heat-treated alloy steel. Reinforced cross-members with husky gussets for sturdy, lasting tandem suspension.

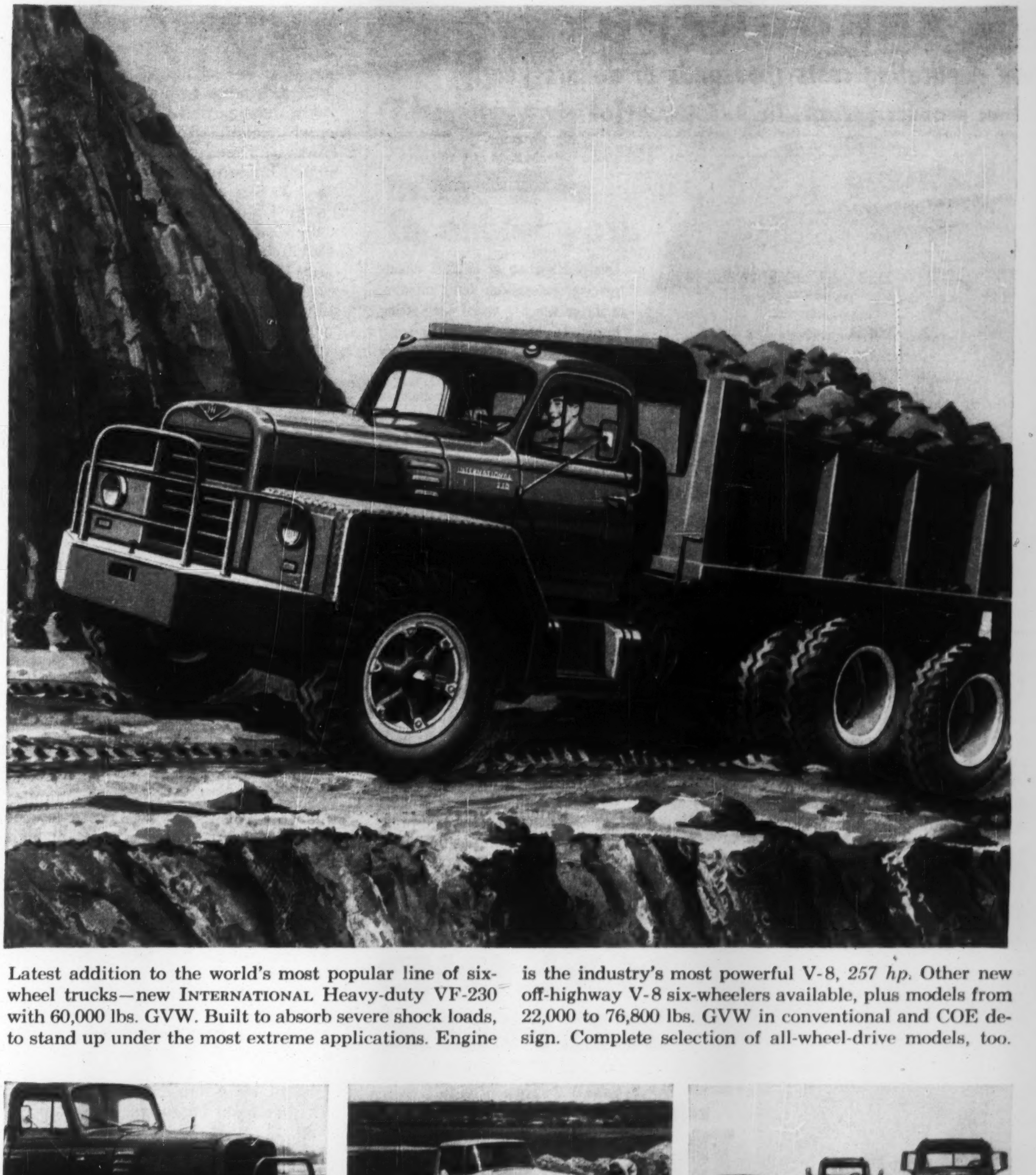


5 **Efficient, fast-acting air brakes** are standard on Heavy-duty VF-230—17½ in. x 3 in. front, 16½ in. x 7 in. rear with 1,162 sq. in. total lining area. Other six-wheel models with brake types and sizes to match load and operation *exactly*.



6 **True geometric steering** provides easier handling and outstanding maneuverability. Heavy-duty gears are cam and roller-mounted twin lever type. Controls mounted *ahead* of the front axle. Power steering standard on this new model.

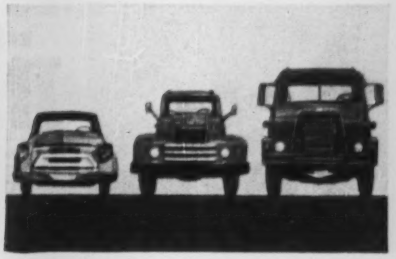
**Signed statements in our files, from fleet owners throughout the U.S., back up this statement.*



Latest addition to the world's most popular line of six-wheel trucks—new International Heavy-duty VF-230 with 60,000 lbs. GVW. Built to absorb severe shock loads, to stand up under the most extreme applications. Engine is the industry's most powerful V-8, *257 hp.* Other new off-highway V-8 six-wheelers available, plus models from 22,000 to 76,800 lbs. GVW in conventional and COE design. Complete selection of all-wheel-drive models, too.

7 **Heavy-duty, functional construction.** Fenders are 12 gauge diamond tread steel plate, welded and reinforced for extra strength and long life. Massive, sturdy bumpers and guards. Rugged reinforced support for front tow pin.

8 **International also offers** a complete line of all-wheel drive models for the tough, off-highway operations. Completely factory-built, 7,000 to 43,000 lbs. GVW. Low height with ample ground clearance. Complete selection of equipment available.



9 **World's most complete line.** There is an International "tailor-made" for *every* job, half-tonners to 96,000 pounders. Choice of 4-wheel, 6-wheel and all-wheel-drive models, conventional and COE design. Every one built to cost *least* to own!

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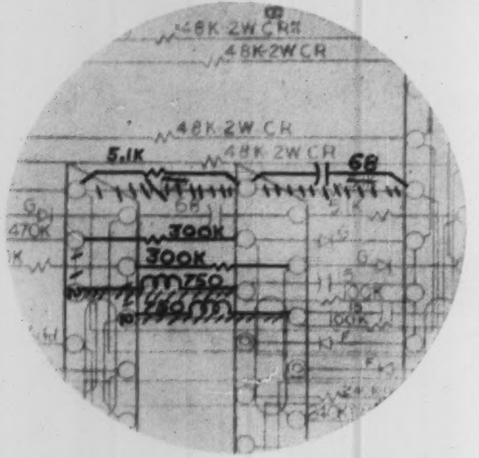
IN PRODUCT DEVELOPMENT LABORATORY OF IBM



Enlarged section of an IBM direct-reading, reverse-run sepia intermediate on which a **visual** engineering change has been pencilled in orange. The change thus appears in boldface black on an offset paper master prepared by xerography and on multiple runoff copies, while unchanged areas of drawing remain gray or subdued.

It is significant that International Business Machines Corp., whose efforts for years have been identified with simplifying the complexities of data processing, is today combining xerography—the fast, dry, electrostatic copying method—with offset duplicating as the most efficient and economical way to deliver vital engineering drawings and change notices in time to meet production and field demands.

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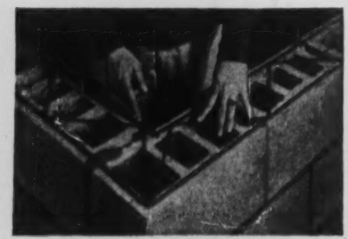

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Sweets
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. . . Niagara project

pacity of 3,400 cfs at 83 ft head when pumping and an output of 27,500 hp at 75 ft head as turbines.

For comparison purposes, TVA's world record size pump-turbine at Hiwassee Dam (only one unit), is an 80,000 hp turbine. At Sir Adam Beck No. 2 Station, the Hydro Electric Power Commission of Ontario is installing six pump-turbines each rated at 45,000 hp at 83 ft head as turbines. The Canadian units are among the world's first Francis runners that have adjustable blades to flatten out the efficiency curve. Specifications for Niagara called for the normal fixed-blade Francis runner, but allow an alternate item for the adjustable-blade variety. Total capacity of the 12 Niagara pumped storage units is a shade less than the six units being installed across the river.

This pumped storage plant will be served by a 60,000 acre-ft reservoir that will store the increased amount of water that may be diverted from Niagara Falls at night and firm up the lowest week's flow of record to the minimum monthly average during the critical flow months. Under a 1950 treaty between the U. S. and Canada, the countries share equally whatever water may be diverted around the Falls for power. Between 8 am and 10 pm from April 1 to September 15 and between 8 am and 8 pm from September 16 to October 31, no less than 100,000 cfs must flow over the Falls. At any other time the Falls requires only 50,000 cfs.

Niagara River flow, on a minimum monthly mean basis, reaches a low of 150,000 cfs in February and a high of 187,200 cfs in June. Actually, the critical months are October and December when power load is highest.

The reservoir will be man-made on flat topography, formed of rolled earth-fill embankments and a tight clay bottom.

An open and nearly flat canal in rock will carry water 1 mile from the pumped storage plant forebay to the Lewiston forebay. This canal, with the same section as the preceding portion of open aqueduct will also serve as surge basin for the main powerplant.

• **Cliffside plant**—Lewiston powerhouse, 1,100 ft long, will be cut into the 45 deg, 310 ft high rock cliff overlooking the river. Water will feed through 25 ft dia steel-lined concrete-encased penstocks, which will lie on the rock cliffside.

Lewiston will be an outdoor-type plant with exposed gantry cranes operating over the generating equipment and the draft tube gates. Thirteen 150,000 kw generators will each be driven by vertical Francis turbines

(*Continued on page 33*)

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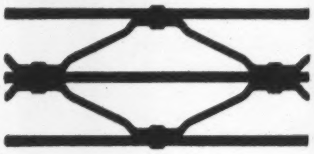
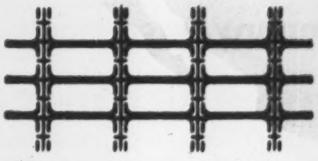


WELDED



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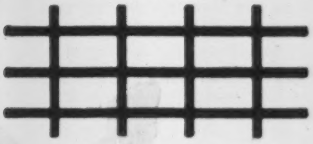

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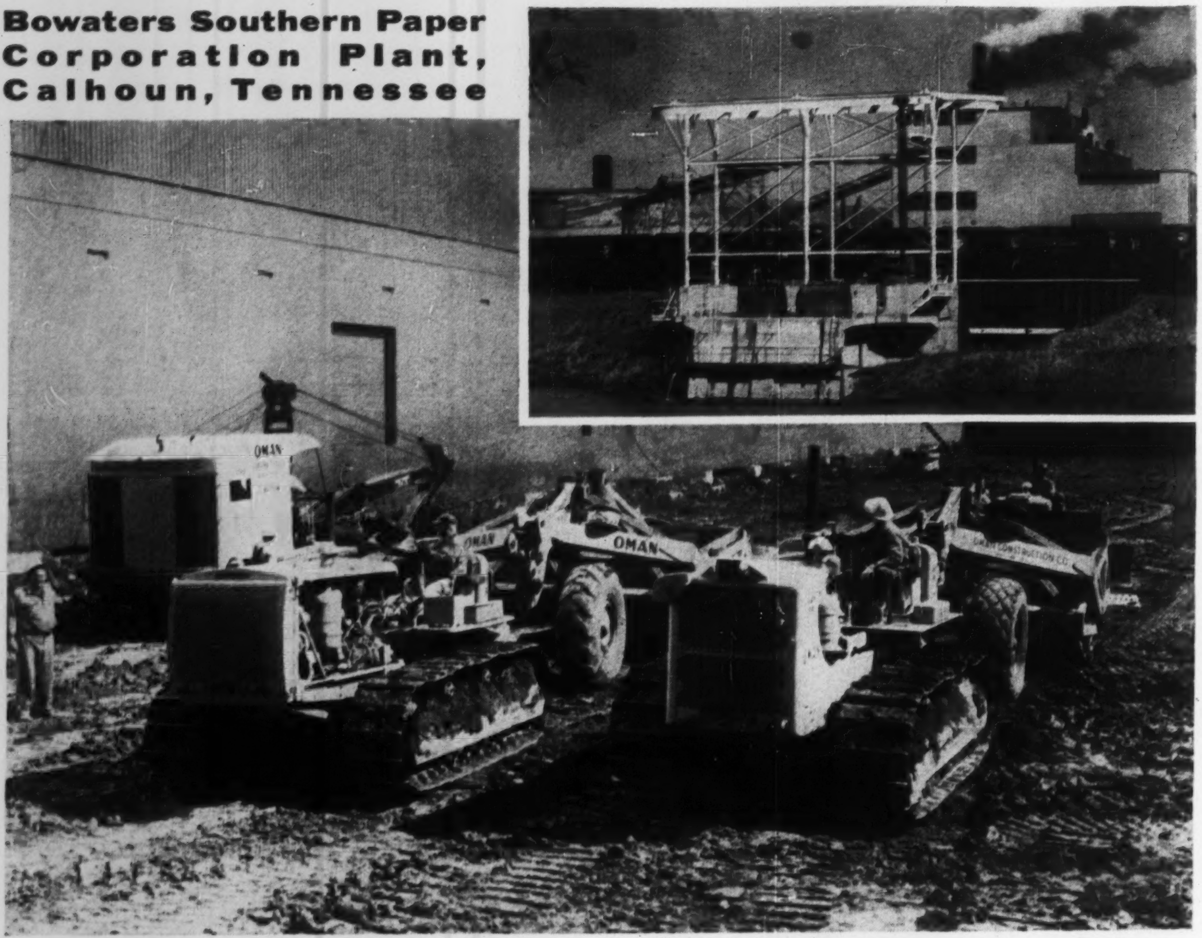

Smooth-purring "Cats"! These super-charged D-8 "Cats" – shown at work on an expansion project at the Bowaters newsprint mill job – have clean, smooth-running engines – thanks to Estor D-3.

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. . . Niagara: Fast construction schedule

rated at 200,000 hp (best efficiency) and 300 ft head. The plant's switchyard will be located on flat ground above and adjacent to the pumped storage plant.

Niagara's dependable power capacity, based on the most adverse combination of low flow and estimated peak daily power demand, has been calculated at 1.8 million kw. But with the anticipated electrical inter-connection of the Niagara and St. Lawrence Power Projects, each will be able to market more of its capacity as firm power. The St. Lawrence normally has its highest flows during September and October, and a critical demand period in December and January. Niagara's surplus and critical periods are happily reversed.

To be constructed as part of the Niagara Power Project, and one of Mr. Moses' selling points for state development, is the $15 million Niagara Parkway shown on the sketch. Spoil from the extensive rock and earth excavation for the aqueduct is to be utilized in the parkway construction. PASNY also has hopes of converting some of the excavated rock into suitable concrete aggregate for use on the project.

• Construction—PASNY plans to divide construction into the following major contracts. (The money figure given is a very rough estimate made a year ago for the project's FPC application):

- Lewiston power plant (less turbines and generators) $71 million.
- Pumped storage plant (less power units) $52.8 million
- Covered conduit $98.9 million
- Open canal from conduit to pump storage plant (included in cost estimate for covered conduit)
- Open canal between power plants $11.8 million
- Intake $25.8 million
- Dredging at intake (included in intake estimate)
- Pump storage reservoir $18.8 million
- Niagara Parkway $15 million

• Equipment—Major equipment contracts are to be these:

- Lewiston turbines $30.3 million (already let for $20.7 million to a joint venture of Baldwin-Lima-Hamilton Corp. and Newport News Shipbuilding & Drydock Co.)
- Lewiston generators $41.2 million (low bid at $20 million by Westinghouse Electric Corp. last Thursday)
- Pump-turbines $10.2 million
- Motor-generators $12.8 million
- Switchyard $14.3 million

• Bids to be higher—With the cost picture changed since the estimates were made, PASNY's consultants for design and construction supervision, Uhl, Hall and Rich of Boston, believe the construction bids will come in somewhat higher than the estimates while the equipment bids will be lower. All contracts will be unit price.

Total construction and equipment costs for Niagara are estimated at $425 million. Engineering, interest during construction and a flat contingency allowance bring the total to $566 million. $600 million is the talking figure due to continually rising costs.

Other major quantities for the Niagara project, aside from the tremendous 30 million cu yd of rock excavation, are: earth excavation, 10 million cu yd; concrete, 3 million cu yd; reinforcing steel, 75,000 tons; penstock steel, 13,000 tons.

To finance its share of the St. Lawrence Project, PASNY sold a single $335 million bond issue in a favorable market. In today's tight situation, PASNY's plan for Niagara is first to secure a bank loan, then to float a number of bond issues throughout the life of the job.

Half of Niagara's power production, according to the Congressional authorization, will be made available to public bodies—municipalities and non-profit electrical cooperatives. The remainder can go to private power companies and industry. PASNY will not sell power directly to consumers, except in the case of large industrial customers like Alcoa.

Providing strong support to Mr. Moses at PASNY are William S. Chapin, general manager, and J. Burch McMorran, chief engineer. The Messrs. Uhl, Hall and Rich are busily expanding what up to now has been a half-speed design operation into a 200 man design force. With Mr. Moses cracking the whip, the slide rules have already begun heating in Boston.

License Request Is Set for Wells Dam on Columbia

The Douglas County Public Utility District of Bridgeport, Wash., will apply to the Federal Power Commission this month for a license to construct the $110 million, 414,000 kw Wells hydroelectric project on the Columbia River, according to manager William Nordeen.

The PUD decision to proceed was made despite a recent denial by FPC to reimburse the PUD for power potential lost through high tailwater at the Wells site from the downstream Rocky Reach Dam, now under construction by the Chelan County PUD.

The Wells site is located downstream from Chief Joseph Dam.

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The Corps Searches for Better, Cheaper

Thomas B. Kennedy
Chief, Concrete Division
Waterways Experiment Station
Vicksburg, Miss.

The Corps of Engineers as one of the largest users of portland cement in the U.S.—4 million barrels a year in civil works alone—naturally encounters many problems in its use. Solving these problems will result in better concrete, or cheaper concrete.

To search out the answers, the Corps maintains extensive facilities for concrete research at the Jackson, Miss., sub-office of its Vicksburg Waterways Experiment Station. There, a million dollar plant of the concrete division includes petrographic, X-ray, chemical, thermal, physical and concrete laboratories plus a 2-cu yd semi-automatic batching and mixing plant with 2 cu yd concrete buckets, vibrators and other such equipment.

Major research now going on at Jackson includes work with partial replacement of cement, portland blast-furnace slag cement, field exposure tests and grouting mixtures.

- **Partial replacement of cement**—The goal here is to reduce to a safe minimum the amount of cement used in Corps of Engineer structures. Primary reason is economy. However, replacement of part of the cement with a suitable material may be accompanied by improvements in workability, strength, durability, impermeability, reduction of volume change on cooling and reduction or elimination of expansion caused by reaction between cement and aggregate.

Reductions in cement through close grading control, improved methods of placement and use of air entrainment have resulted in cement contents for interior mass concrete generally of 2.5 to 3.0 bags per cu yd, with isolated cases of as little as 2.0 bags.

Well-proportioned concrete is a carefully balanced combination of ingredients in a mechanically efficient granulometric system. Grain size will range from a few microns for the finer cement grains to as much as 6 in. for the coarse aggregate in mass concrete. For optimum plasticity and easy workability there must be a nice balance between successive grain sizes. Any further reductions will have to result from use of replacement materials.

In 1950, the Waterways Experiment Station started on a comprehensive investigation of all available classes of materials that might be used for partial cement replacement. Sixteen materials representing six classes were selected for study (see tables). The materials represented the range and composition likely to be encountered throughout the U.S.

Natural cement itself possesses hydraulic properties; the blast-furnace slag in the presence of moisture and alkalies is hydraulic and realizes its full potential in the presence of lime. The other materials are pozzolanic and contain glassy siliceous constituents that react with the calcium hydroxide and possibly the iron and alumina of the cement.

Five portland cements were used: a high-alkali and a low-alkali type I, a type II, type III and a type IV.

The major portion of the investigation was built around two series of concrete mixtures; one with 0.8 water-cement ratio simulating mass concrete and one with 0.5 water-cement ratio simulating structural concrete. Over 160 mixtures were made, from which data were derived on both plastic and hardened properties. Based on the literature, experience, and advice of our consultants, each replacement material was used in the assumed optimum percentage with the type II and type I high-alkali cement. One material of each class was used in assumed optimum with each of the four cements. Information on the use of larger and smaller percentages than the assumed optimum was obtained for one material in each class in combination with the type II portland cement (see tables).

To provide a simple and useful comparison of the relative effectiveness of the 16 materials on the basis of performance in concrete at each of two equal water-cement ratios, certain data were selected and combinations were rated with respect to their performance (see tables).

A maximum score of 100 is possible for the structural concrete mixes. For mass concrete, the basic mixture—without replacement—hits a score of 55. The mass mixtures with replacements can exceed the basic score since they are given credit for reduction in heat of hydration resulting from use of the replacement material.

When these six classes of partial replacement materials were used in test mixes...

→

...And the concrete evaluated under these weighted factors...

→

... Best ratings occurred when replacement percentages were those underlined.

→

Indication:

→

The investigation has shown that each class of replacement material can be used successfully to replace a portion of the portland cement in either structural or mass concrete. The exact proportions for optimum performance in project usage, however, will not necessarily be the same as indicated or assumed in the present laboratory investigation. They will vary with source of material, brand and type of cement, constitution and grading of aggregate and so forth. Their use by the Corps, in each case, will be preceded by an office study to determine

Concrete

One of the world's largest cement users is finding out how much and what kind of partial replacement material can be used in mass and structural concrete

1. **Granulated blast-furnace slags—2 sources**
2. **Natural cements—2 sources**
3. **Fly ashes—4 sources**
4. **Natural volcanic glasses—4 sources (pumice, pumicite, tuff, obsidian)**
5. **Calcined opaline shales—3 sources (burned at about 1500 F)**
6. **Uncalcined diatomite—1 source**

For Structural Concrete: w/c 0.5, Type II cement

	Test Value	Score
Bleeding of freshly mixed concrete, %	0 to 5.0	10
	5.1 or more	0
	15.1 or more	*
Permeability at 90 days Kc, cfs/ft²/ft/ft head × 10^{12}	0 to 25	5
	26 or more	0
	41 or more	*
Durability, DFE, 14 days	60 or more	35
	59 or less	0
	39 or less	*
Compressive strength, psi, 28 days	3000 or more	20
	2995 or less	0
	1995 or less	*
Compressive strength, psi, 90 days	4000 or more	10
	3995 or less	0
	2995 or less	*
Shrinkage, %, 180 days	0.070 or less	20
	0.071 or more	0
	0.100 or more	*

For Mass Concrete: w/c 0.8, Type II cement

	Test Value	Score
Bleeding of freshly mixed concrete, %	0 to 7.0	25
	7 to 9.0	20
	9 to 10.0	15
	10 or more	0
	20 or more	*
Permeability at 90 days Kc, cfs/ft²/ft/ft head × 10^{12}	0 to 10	35
	11 to 20	25
	21 to 30	15
	31 to 40	5
	41 or more	0
	90 or more	*
Compressive strength, psi, 3 days	500 or more	10
	495 or less	0
	295 or less	*
Compressive strength, psi, 90 days	2000 or more	5
	1995 or less	0
	995 or less	*
Reduction in heat of hydration, cal/g (compared to 100% portland cement)	30 or more	25
	20 to 30.0	20
	10 to 19.9	15
	5.0 to 9.9	10
	4.9 or less	0

* Scores in this range are regarded as probable cause for rejection of concrete yielding them without regard to other values.

Replacement Material	Percentages	Rating of Different Percentages of Replacement: Lower	Assumed Optimum	Higher
Slag I	30, 50, 70	95	100	25
Natural I	20, 35, 50	100	100	80
Fly Ash I	30, 45, 60	100	45	35*
Pumicite I	25, 35, 45	100	60	50
Calcined shale I	20, 30, 40	100	80	80
Uncalcined diatomite	8, 12, 16	100	100	100
No replacement			100	

Replacement Material	Percentages	Rating of Different Percentages of Replacement: Lower	Assumed Optimum	Higher
Slag I	30, 50, 70	55	25	25*
Natural I	20, 35, 50	55	85	80
Fly Ash I	30, 45, 60	35	30	15*
Pumicite I	25, 35, 45	55	35	35*
Calcined shale I	20, 30, 40	75	80	60
Uncalcined diatomite	8, 12, 16	75	75	65
No replacement			55	

* Rating includes one or more test values regarded as probable cause for rejection of the concrete yielding them without regard to other values.

The assumed optimum for replacement is, in many instances, too high.

the potential savings for in-place cost, and by a laboratory study to establish optimum proportions to suit conditions under consideration.

- **Portland blast-furnace slag cement**—The manufacture of portland blast-furnace slag cement has been carried on in the U.S. by one or two companies for many years. Recently, other companies have begun to make it and still others have indicated their intention to manufacture slag cement.

In order to evaluate the situation, samples of cement, slag and clinker were obtained in 1955 from every mill known to be manufacturing the product. We wanted to see if portland

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Underground piping must be protected against destructive forces of corrosive soils and electrolytic conditions. Normally, coal tar coating as called for in AWWA specifications C-203 and C-204 would be hot-applied at a coating mill. However, there are times when the volume of pipe involved or the distance of a coating mill make this impractical from a time and cost standpoint.

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blast-furnace slag cement could be substituted for type I or II in Corps construction.

Each slag and clinker was examined and analyzed, and each cement was examined, analyzed, and tested in pastes, mortars and concrete. Our results suggest that current federal and ASTM specifications provide adequate assurance that portland blast-furnace slag cements complying with the requirements thereof will give performance at least equal to that insured of type I portland cements by the present ASTM and Federal specifications.

We also found that the portland blast-furnace slag cement frequently will have heat of hydration low enough to meet the optional requirement for heat of hydration for type II portland cement in the current federal specifications.

Our work with this material continues. By the end of the program we hope to know—in addition to such standard information as strength and durability in freezing and thawing—whether reinforcement in portland blast-furnace slag-cement concrete rusts more than in regular portland-cement concrete, and how it stacks up for resistance to sea-water attack.

• **Field exposure stations**—On Treat Island in Cobscook Bay near Eastport, Maine, we have an exposure station where over 1,500 concrete specimens of various sizes, shapes and compositions are exposed at mean-tide elevation. The National Bureau of Standards, the Bureau of Public Roads, the Portland Cement Association and the National Sand and Gravel Association also have some specimens at our station. We have a similar, though smaller, installation off the East Coast near St. Augustine, Fla. These stations afford us the opportunity of checking laboratory findings with field durability.

Our station in Maine has demonstrated vividly the marked superiority of air-entrained over non-air-entrained concrete when exposed to freezing and thawing. It has also shown that properly proportioned concrete with as little as 2 bags of cement per cu yd, if air entrained, will be durable.

One series of specimens at Treat Island is composed of highly stressed reinforced concrete beams that with passing time are demonstrating the superiority of ASTM A 305 reinforcing over the old-style steel where severe weathering is a factor.

The station at St. Augustine is providing us with information on the effect of cement composition on durability. Cements high in C_3A (tricalcium aluminate) are less durable than those with low C_3A, regardless of air entrainment. In attempts to discover the nature of the deterioration occurring in sea water, we regularly return disintegrated specimens to the laboratory for petrographic and X-ray study.

• **Grouting**—Using regular field mixing and pumping equipment, we have been studying the limits of pumpability of sanded grouts containing natural and manufactured sands with different gradings, both with and without the addition of fine mineral fillers, such as fly ash, pumicite, loess and diatomite. Sanded grout is, of course, cheaper than neat grout.

The amount of material passing the No. 100 sieve has a direct bearing on the proportion of sand-to-cement that will remain in suspension in grout and permit it to be pumped without difficulty. Shown below are the different proportions of sands-to-cement that were found to be pumpable.

Sand	% Pass No. 100	Parts by Weight Cement	Parts by Weight Sand
Natural	0	1	2.00
Limestone	0	1	1.75
Traprock	0	1	1.75
Natural	10	1	2.50
Limestone	10	1	3.25
Traprock	10	1	2.00
Natural	25	1	3.00
Limestone	25	1	7.00
Traprock	25	1	2.25

Whether the fine material is cement itself, fly ash or other material or fines in the sand itself seems to be of little importance. The presence of the fines is what counts, as indicated in the following tabulation of pumpable grouts in which the parts are given by weight.

Diatomite 1.00:Cement 1.00:Sand 9.00
FlyAsh 1.00:Cement 1.00:Sand 6.50
Pumicite 1.00:Cement 1.00:Sand 6.50
Loess 1.00:Cement 1.00:Sand 6.00

• **The research**—Other areas we are studying include instruments for measuring pore pressures developed when a reservoir is flooded, the effectiveness of pozzolans as inhibitors to the expansion due to alkali-aggregate reaction, the creep characteristics of concrete, permeability of concrete to water, the parameters influencing effective vibration of concrete, the durability of several prototypes as reflected by soniscope observations, reliability of meters for direct measurement of stress in concrete.

We are preparing to study the effects on durability caused by relaxation of prestress caused by creep of both concrete and steel; also the fatigue characteristics of prestressed concrete sheet piling.

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Vibration Isolators Steady

DYNAMICS EXPERT F. J. Crandell examines spring mount he designed for Berkshire-Hathaway's weave-room floor beams..

Vibration isolators between the floor beams and walls of a building have finally freed a New England textile manufacturer from the horns of a dilemma. But not before some production was sacrificed and a brick wall cracked.

Four years ago, Berkshire-Hathaway, Inc., faced unpleasant alternatives in connection with a mill at New Bedford, Mass.: The firm could abandon a recently instituted 6% increase in loom speed and suffer the competitive consequences; or it could maintain loom speed and run the risk of shaking the building apart—the brick walls of the 62 year old mill were oscillating in disturbing fashion.

• Usual remedy no good—Lots of industries can cure vibration ills by setting each machine on vibration absorbers. But looms won't operate properly when so mounted.

In loom operation, the woof (cross thread) is laid down by a shuttle, which is knocked back and forth across the loom as many as three or more times a second. After each flight of the shuttle, a blow from a 200 to 500 lb element called the lay bar drives the cross thread tightly into place. If a loom were mounted on vibration isolators, the pounding of the lay bar would cause the machine to oscillate with an amplitude of perhaps 0.3 in. On such an unsteady platform the shuttle might follow, instead of a straight path, a wavy course, laying down a trifle too much thread. The result would be cloth graded as seconds and a loss of income to the mill.

• The building—The scene of the vibration difficulties was a 900 ft long 3 story brick and timber building, constructed before the turn of the century. Actually it is two buildings connected in the center by a stairwell section. For half its length the building is 100 ft. wide and is known as Bldg. 31. The remainder, 128 ft. wide, is called Bldg. 30.

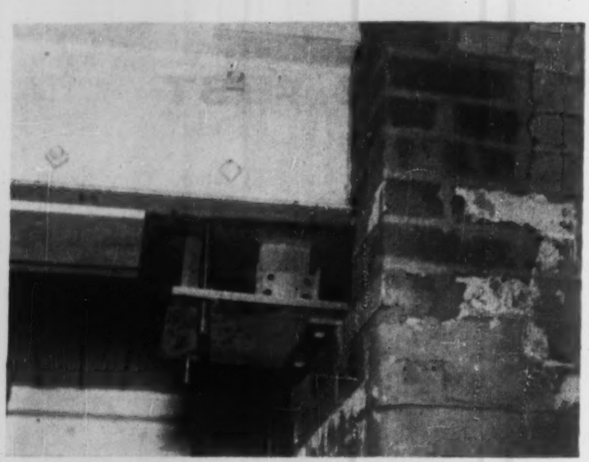
Both buildings have brick walls, timber floor beams and columns, and wood plank floors. To permit the operation of high-speed looms, the second floors had been reinforced in 1949 by bolting steel channels on both sides of the beams. In addition, Bldg. 30 had been widened one bay by erecting a new brick wall along one side, replacing the old wall with new steel columns, and adding steel floor and roof beams.

• Past vibration trouble—To attack the vibration problem—which was in Building 31—Berkshire-Hathaway called in its regular architect-engineer consultant, F. P. Sheldon & Son, of Providence, R. I. Sheldon had treated successfully a similar condition in 1950-51 in the same building by bracing the third floor columns, beams and walls.

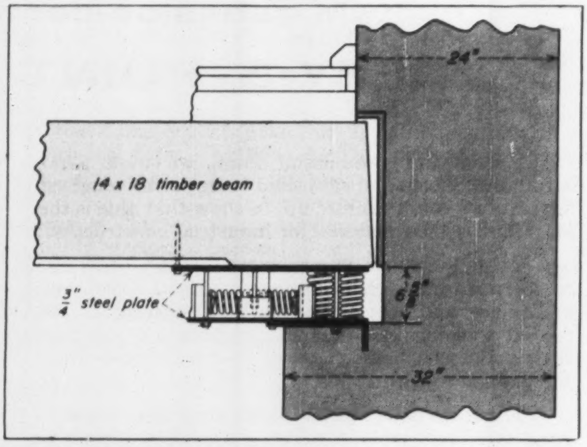
The third floor itself had not been loaded with looms, but it had been loaded heavily with other materials and equipment, and the maximum effect of the vibrations arising from the weaving operations on the second floor had occurred about 6 ft. above the third floor.

• Bracing proves useless—Since bracing the third floor had turned the trick before, Sheldon now decided to try the same treatment at the second floor. The critical stresses resulting from the oscillations were still occurring just above the third floor, but that level was already braced.

He carried out the plan, but the



WOOD BEAMS were stiffened some years ago with steel channels both sides to permit operation of high-speed looms.



SPRING ISOLATOR is the only contact between weave-room floor and wall, protects latter from punishing oscillations of looms.

Plant's Walls

second-story bracing was not effective. It appreciably reduced the third-story vibrations, but the stresses in the walls were still high and there was still partial resonance between the speed of the looms and the natural frequency of the walls. Consequently it was decided to remove the bracing at the second story and reduce the loom speed.

• **Cracked wall**—This state of affairs was not satisfactory, but the textile firm lived with it until 1955. In October of that year a third-story wall of Bldg. 30 cracked. F. J. Crandell, a Boston dynamics specialist, was already on the job.

As assistant vice president and chief engineer of Liberty Mutual Insurance Co., Berkshire-Hathaway's underwriter, Mr. Crandell had been keeping tabs for some time on the dynamic behavior of the buildings, measuring and recording the accelerations and frequency of oscillation of various parts of the structure with a device developed by him and called the three-plane accelerograph.

Crandell's accelerograph consists essentially of three reeds, respectively free to vibrate in three mutually perpendicular planes. Vibrations are recorded on a moving film strip, exposed to a light beam reflected from a concave mirror connected to the end of each reed.

The crack eventually forced a slowdown of the looms from 170 to 160 picks (shuttle flights) per minute. In the meantime, though, the B-H management had decided to go along with Crandell's recommendation to try a limited number of spring-type vibration isolators under the second-floor beams at the wall bearings. This measure, instead of stiffening the building against excessive oscillation, would simply make use of a resilient device to absorb vibration energy before it reached the walls.

VIBRATION MEASUREMENTS were made with a three-plane accelerograph.

• **Earlier isolation job**—This was unusual, but not unprecedented, treatment. Liberty Mutual—through Crandell—had pioneered a similar installation in 1951 in a building of the Huntsville (Ala.) Mfg. Co., also a textile mill. Since that operation had proved highly successful, Crandell now designed similar isolators for the Berkshire-Hathaway job and called on Allen Engineering Co., of Boston, fabricator of the Huntsville mounts, to manufacture the units.

The isolator consists essentially of a lower steel plate that bears on the wall, an upper plate on which the beam rests, and a number of heavy coil springs oriented horizontally and vertically between the plates. Over all the units are about 23 x 15 in. by 6 in. high.

• **First isolators**—The first 30 were installed in July, 1956, during a mill holiday. The beams were shored up, openings were cut through the brick pilasters at the beam bearings, and the isolators were installed under the beam ends. The units were compressed before-installation—from their unloaded height of 6 3/16 in. to their loaded height of 5 3/8 in. Later the precompressing bolts were removed.

Total cost at each bearing, including the isolator itself, was about $500. Sullivan and Foster, New Bedford contractors, installed the isolators.

• **Success**—Mr. Crandell was on hand to test the installation when the looms were started up after the holiday. He reported that vibrations and stresses were reduced from 70% to 80% in the isolated wall sections. He also concluded that no resonance existed between the isolators and the building, and that floor movements were well within the physical tolerance of workmen.

The payoff conclusion, however, was that loom speed in the isolated section could be increased from 160 to 170 or even to 180 picks per minute. And the findings were substantiated in November by another vibration survey.

Evidence that the isolators are a satisfactory solution to the problem lies in the fact that Berkshire-Hathaway has just installed 40 more, completing the treatment of Bldg. 30.

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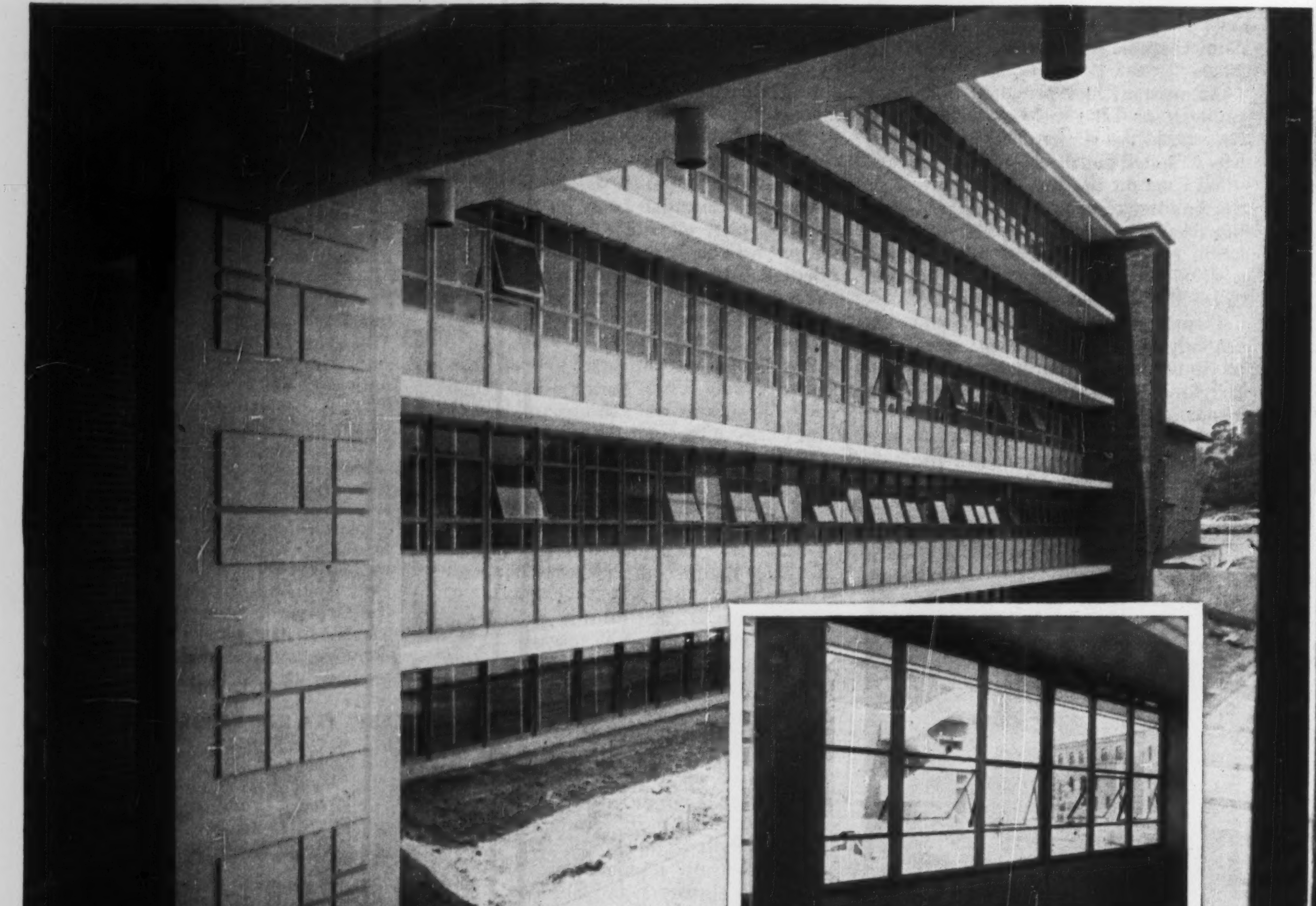

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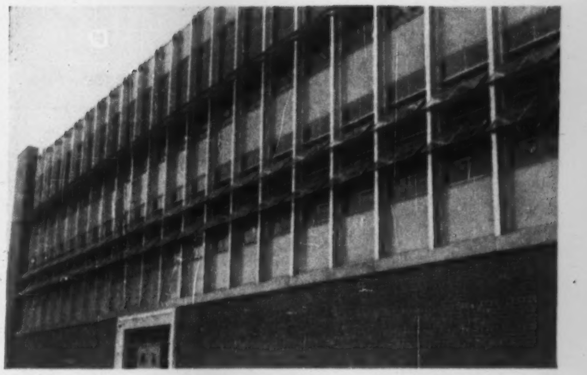

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STEEL

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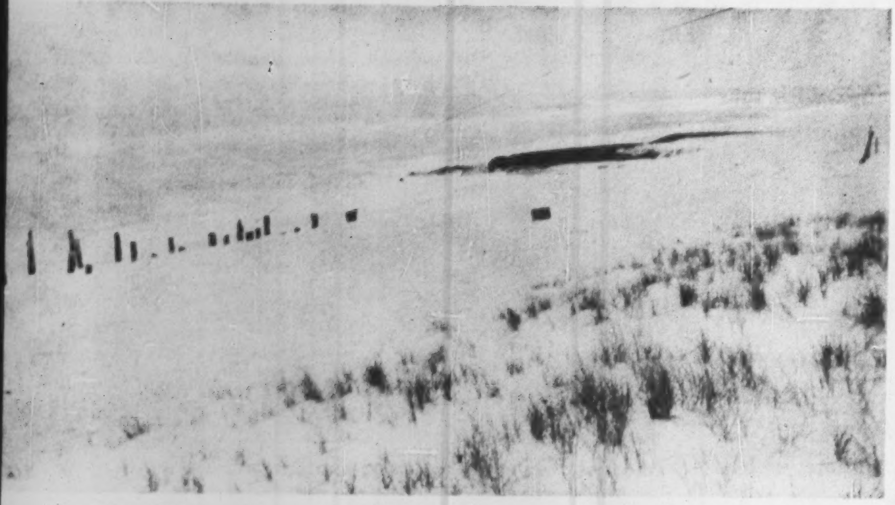
Beach protection normally is costly and difficult. But the results of tests being made by Maryland with easy-to-place, inexpensive groins may change that.

Asphalt Groins—Two-Year Report

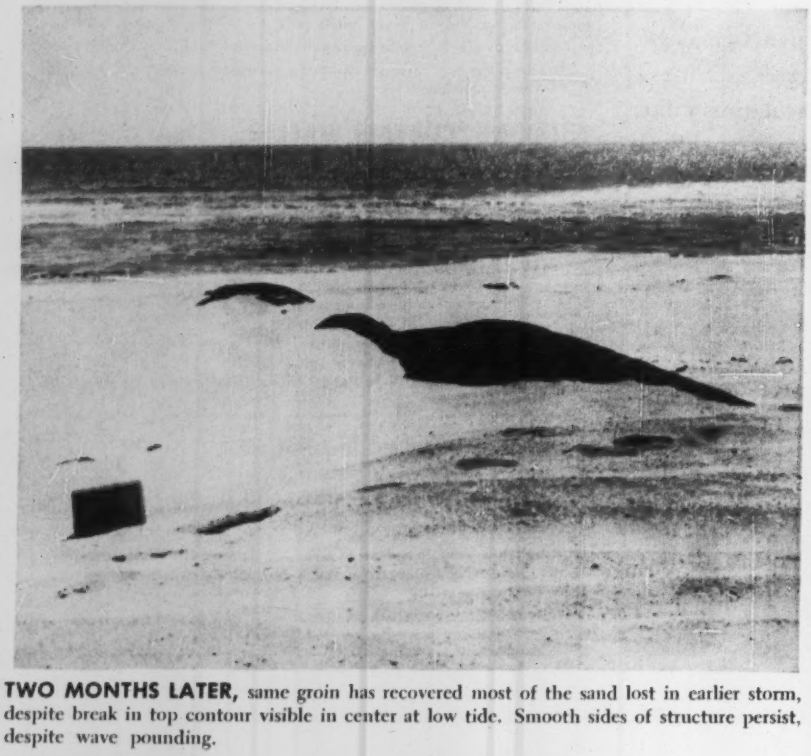


OLD PILES stand above beach after northeast storm scooped about 5½ ft of sand off Ocean City, Md., beachfront. Nearly full length of asphalt-sand groin is exposed at right.

Early in October of 1956, Richard A. Haber, chief engineer for the Delaware State Highway Department, stood at Indian River Inlet on the state's tiny Atlantic Ocean beachfront, and ruefully surveyed the remains of an ancient pine forest—all that remained of what had been one of the East Coast's finest stretches of ocean beach.

A hurricane—whimsically nicknamed "Flossy", thus the sixth of the season—had just passed by. Haber's later report to headquarters at Dover was a sober one: Damage to the Delaware shoreline would total more than $1 million. But Maryland's equally tiny stretch of ocean front, just to the south, was by comparison in fine shape, because of the groins that protect it.

In a nutshell, that's as good a progress report as can be made on the success of Maryland's experiment with asphalt-sand groins for shore protection (ENR Sept. 8, 1955, p.34). For a total



TWO MONTHS LATER, same groin has recovered most of the sand lost in earlier storm, despite break in top contour visible in center at low tide. Smooth sides of structure persist, despite wave pounding.

MIDSUMMER, and groin is nearly invisible, old piles completely invisible as beach recovers its full complement of sand. Man expenditure of about $130,000 over a 2-year period, the state had saved itself nearly 10 times that amount in damages from a single storm.

And an inspection nine months after Mr. Haber's report—a sideswipe from another hurricane and several much more damaging northeast storms later—the story remains nearly the same. Delaware's famed beaches at Rehoboth, Bethany and elsewhere are almost nonexistent; Maryland's equally famous Ocean City and the area to the north of it holds its beaches and builds them bigger.

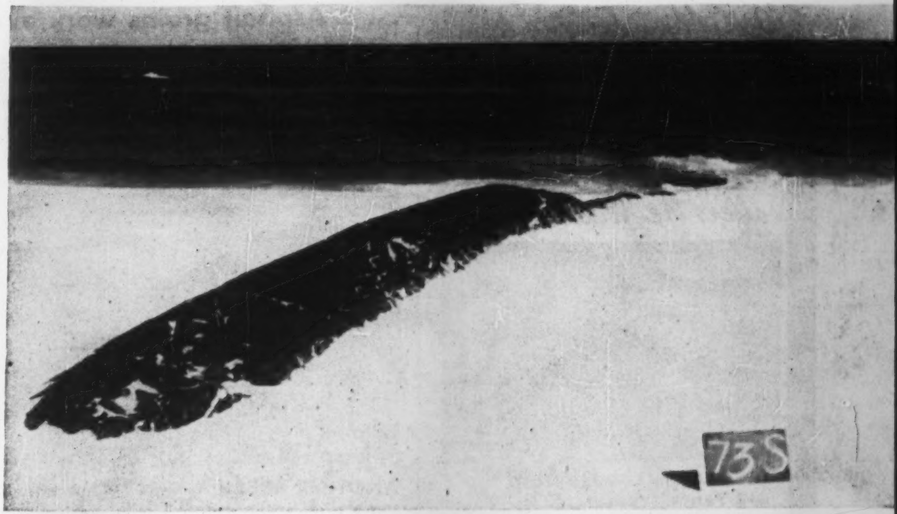
According to Walter C. Hopkins, deputy chief engineer for the Maryland State Roads Commission, Maryland "is trading a little better than even with the ocean—it takes some sand away during the storms, we take back a little more in the periods between."

• **Theory and practice**—Outgrowth of many years of experience with the vagaries of the Atlantic Ocean along its 31.5 miles of beachfront centering on Ocean City, Maryland's last asphalt groin was installed almost exactly two years ago.

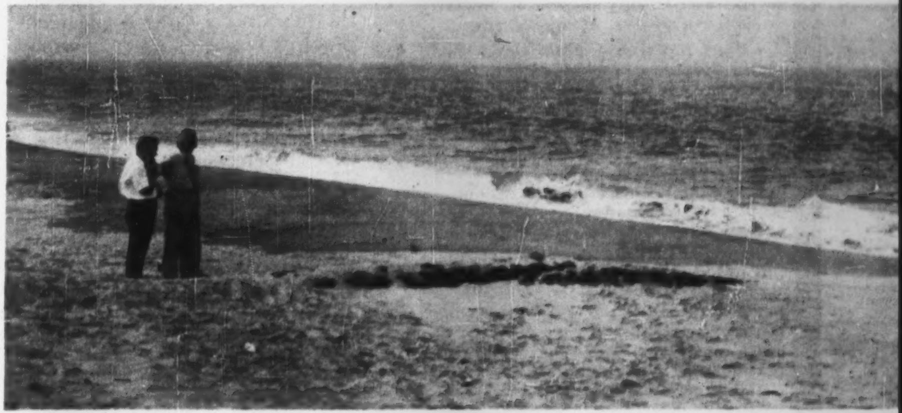
At present, 38 of the asphalt-sand structures are in place at 900 ft intervals along the beach from Ocean City northward to the Delaware state line. Five more are in place at 450 ft intervals between wood groins previously constructed along the boardwalk.

Maryland's slightly less than one

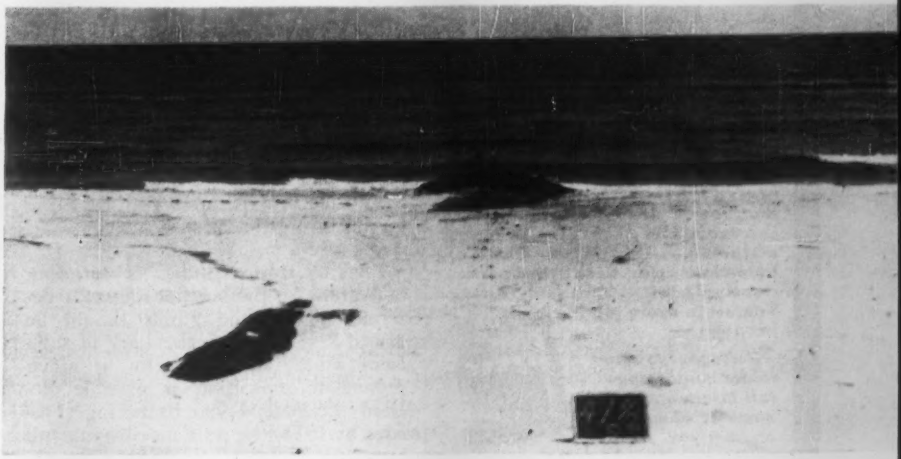
at center is standing on seaward end of groin, only inches of rear of structure are now visible at right.



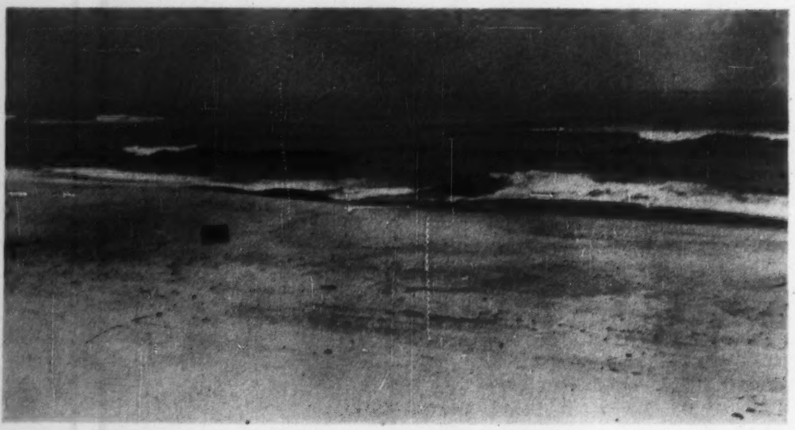
UNBROKEN by more than a year of storms and wind, groin at 73rd Street, north of main part of Ocean City, shows form from dune line to low-water surf. Structure is 3½ ft high from base to top when built on the beach.



THIS ONE IS BROKEN, but continues to function anyway. Walter C. Hopkins (right), engineer in charge of beach protection work, and John D. Bushby, who supervised construction, are pleased that any part of groin remaining appears to function.



BREAK IN TOP CONTOUR is visible as a "saddle" at low tide. Nevertheless, upper portion of groin (left center) is still at full height, and beach sand has accumulated to within inches of top.



ANOTHER BREAK is visible at low tide, between nose of groin and its main body, just above surf at low water. Upper portion is intact.

third of the ocean front of the DelMarVa peninsula (jointly occupied by Delaware, Maryland and Virginia) has always been a jealously-guarded state asset, particularly the long narrow barrier sand reef on which Ocean City stands. Over the years, the state had built protective groins and other works along the sand reef, with the eventual hope of complete protection. But lack of funds, and the cost of good groins (roughly $15,000 for a 200 ft structure, and four months' construction time) slowed the process greatly.

But in late spring of 1954, Mr. Hopkins (with the active backing of Chief Engineer Norman M. Pritchett and Governor Theodore R. McKeldin) began construction of groins made of road-type hot-mix asphalt and beach sand, without piles or other footings. These groins—200 ft long, roughly triangular in shape (except for spoon-shaped noses at the low water mark)—could be built for roughly $3,000, and in a matter of hours—between rides—from start to finish.

With funds allotted that would have built only a few wood structures, Hopkins and road commission crews actually built the entire system from Ocean City north to the state line over a period of two years, the groins being spaced at 900 ft intervals (excepting for the five at lesser spacing).

• Trial by storm—Studies of optimum protection for the beaches originally determined that the groins should be placed a 450 ft intervals. Lack of sufficient funds, and desire for as much immediate protection as possible dictated the general 900 ft spacing. Perhaps by 1958, the state may begin work installing 33 more structures.

Meanwhile, the existing groins have been left at the mercy of the sea and wind, for study, and pending further refinements in their construction. Although some have been broken in the period, no repairs have been made.

Since the first asphalt groin was installed late in 1954, a total of at least six hurricanes have passed over the area, plus many more northeast storms—which in general have done greater beach damage than have the hurricanes.

But all of the groins still stand, and all—despite some breakage of their top contours—still work. That seems to be the most remarkable feature of this type of structure: Because of its solid, smooth and impervious mass, any part of the structure remaining will continue its function of accumulating sand from the ocean current. Basic design principle, in fact, is that the groins will act as dams behind which ocean sand will settle, as waves wash over them. Inspection of the beach in mid-summer this year shows most of the groins to be completely invisible under the sand, though many of them were exposed during winter storms. Losses of as much as 5½ ft of sand have been fully recovered.

Meanwhile, a committee which includes among its members The Asphalt Institute, the American Petroleum Institute, and the Maryland State Roads commission, is at work on research into a mix that might prove to be more stable than that used to date (60-70 penetration paving grade, with varying quantities of beach sand, bank-run gravel and some other experimental additives such as slag).

No maintenance will be put on the existing groins—although theoretically they can be repaired by any road crew equipped with a hot-mix plant. When the new groins have all been put in place, so that all are spaced on 450 ft centers, then the older ones will be rebuilt—if need be—to incorporate any new developments.

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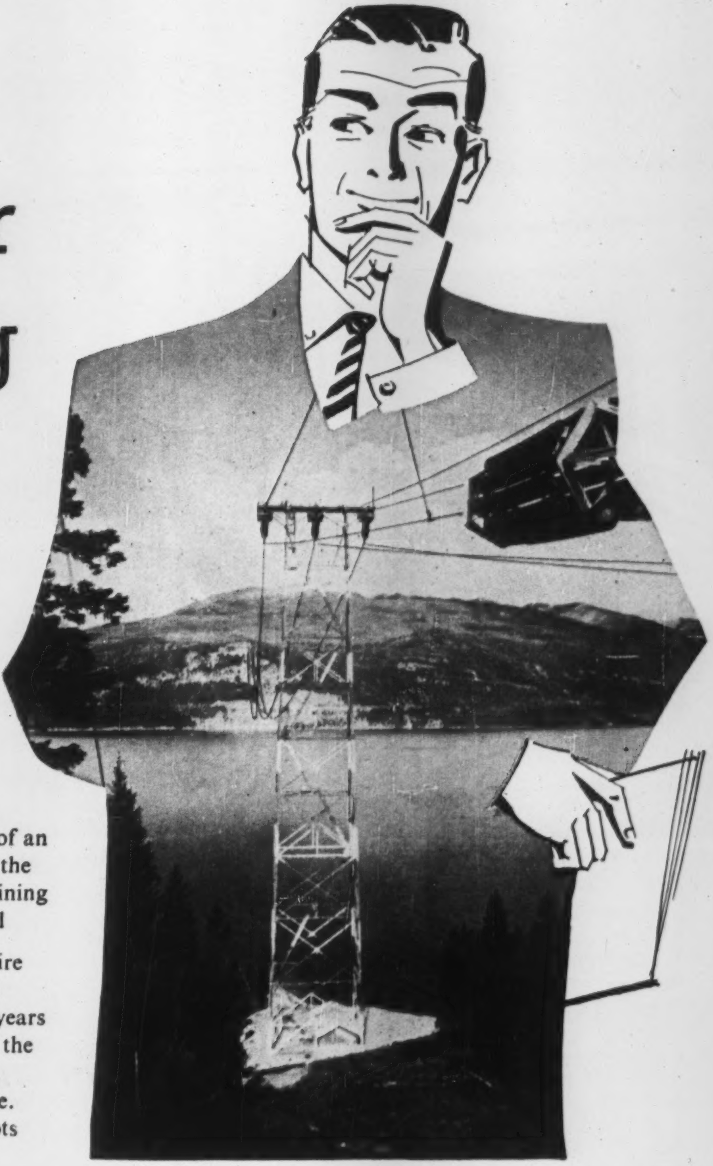

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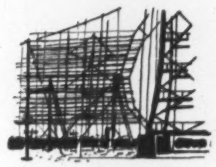

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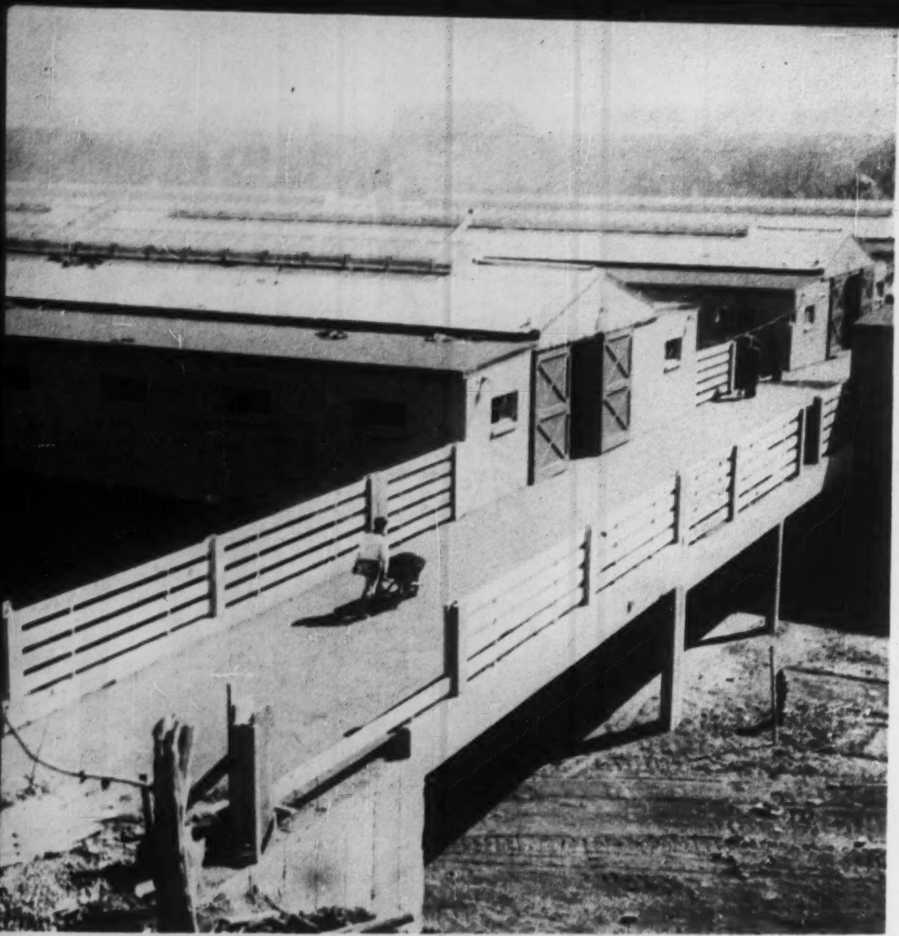

STABLES at Yonkers Raceway, Yonkers, N. Y., are built in a concentrated cluster to free areas for parking. Second floor stables connect to common runway.

Two-Story Stables Gain Parking Area for Raceway

Jacob Feld
Consulting Engineer
New York, N. Y.

To increase attendance by providing more parking area for racing fans, Yonkers Raceway at Yonkers, N. Y. was forced to raze 18 one-story wood stables. The area needed was gained by replacing the old stables with a concentrated cluster of 8 two-story reinforced concrete structures.

Lack of public transportation, inadequate parking space and inability of the raceway to expand into surrounding areas to get more space had become a major deterrent to attendance, since most patrons at the nightly races used private autos for transportation. The construction of the 2 story stables enabled the raceway to provide fireproof shelter for 600 horses and to add eight acres to the available parking areas—an additional capacity of 1,000 cars.

The existing stables had to be demolished and the new ones put up in the 4-month winter period between December and April, so as not to disrupt attendance during the racing season.

Design of the stables and construction operations were planned to reduce the problems of cold weather building and to meet an inflexible completion date.

• **Stable design**—The lower floor of each of the 2 story stables is at ground level. It contains 38 back-to-back stalls opening on exterior covered arcades 10 ft wide. The upper floor is a reinforced concrete slab supported by three longitudinal walls of the lower stalls and two exterior lines of steel pipe colums. The stalls on the upper floor are entered from a covered interior corridor 21 ft wide.

The upper floor corridors have exits at each end and connect to asphalt-covered concrete runways 15 ft wide. Runways lead to either a 6% grade ramp or to an upper level roadway cut into the bank of a surrounding hillside.

• **Site preparation**—Demolition of the existing wood barns started Dec. 1, the day after racing ceased for the 1956 season. Normal wrecking operations were too slow; so a 2 cu yd shovel and several buldozers were used to speed up the clearing job. With this equipment, the barns were smashed, piled and burned in less than two days each.

General grading included the removal of about 10,000 cu yd of ledge rock and about the same volume of earth.

• **Building the stables**—Foundations consisted of three parallel strips of trench filled with concrete to 12 in. depth. The outside lines of columns rest on shallow piers excavated or cored to natural soil. Walls are founded below grade on concrete-block piers with shoulders to carry precast concrete beams that support the cross walls in the stable.

All longitudinal and end walls are 8 in. solid masonry block. Cross walls are 4 in. hollow blocks anchored to the long walls with metal anchors.

After the first-story walls were built, plywood formwork for the second-story floor concrete was erected and supported on adjustable shores. Exterior pipe columns were set in position after the formwork was substantially completed. At the top plate of the columns, hook bars were welded for anchorage and moment transfer.

Bottom-slab reinforcement in the floor consisted of a layer of welded steel wire fabric, continuous over the entire slab. Negative steel consisted of a set of bent bars at the column line and strips of wire fabric over the walls.

Concrete for each stable slab was placed in two sections, about 100 ft in length. Space heaters below the forms and canvas wind deflectors above the slabs were used for weather protection. Mix was 3,000 psi concrete with 2% calcium chloride additive to high early strength portland cement.

Second story wall erection started two days after the slab was placed. When these walls were finished, precast channel slabs were used to roof the exterior spans over the stalls.

Steel roof trusses span the 21 ft wide center aisle and are welded to anchored strap washers on top of the channel slabs. Corrugated asbestos-cement roofing plank was then attached to purlin channels. A continuous skylight runs

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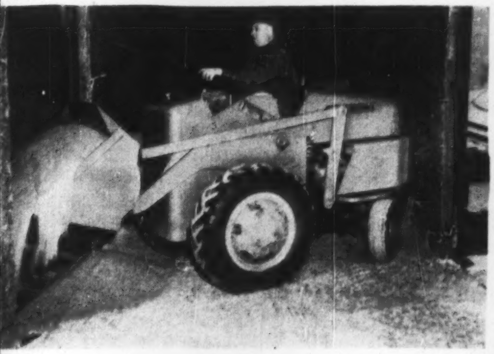

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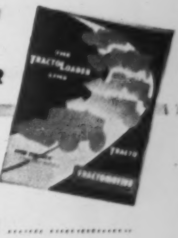

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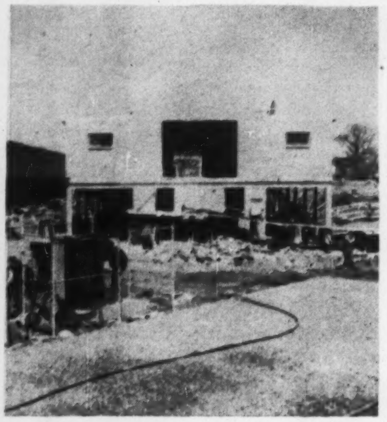
. . . Two story stables



SECOND FLOOR stables extend over the exterior arcades for the lower stables.

along the truss ridge for light and ventilation.

• **Floor surfacing**—Both upper and lower floor surfaces are covered with earth. This is to protect the horses' hoofs and guard against their drying out.

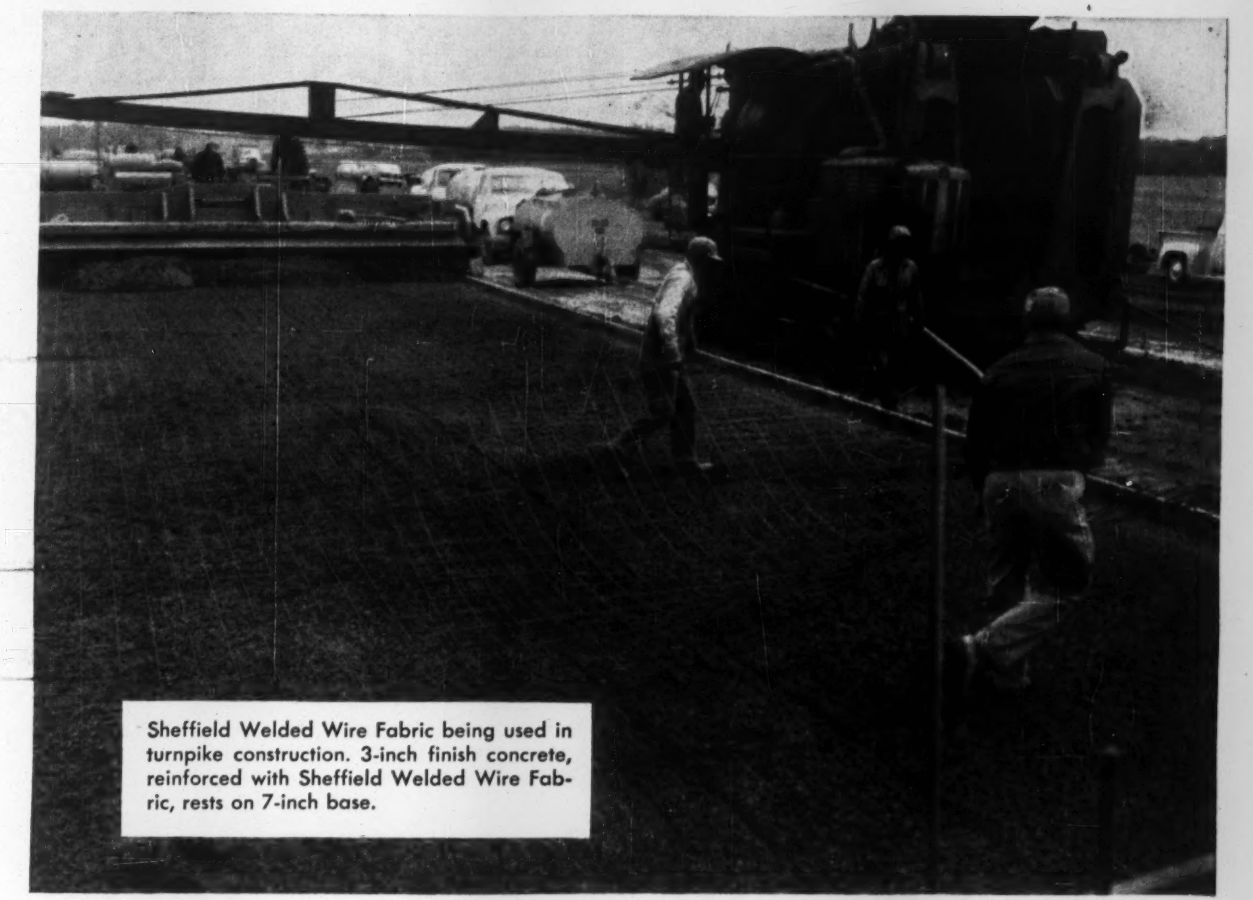
A 4 in. layer of gravel was laid on a waterproof membrane over the second-story slab and 6 in. of a sand-silt mixture spread and rolled on top of the gravel. Each upper level stall has a floor drain to remove wash water. The ground level has a similar soil blend which has been laid directly on graded surfaces.

• **Access runways**—The runways are one-way slabs supported on girders and columns, except where they adjoin an end of a stable. There a bracket was provided on the end beam of the second floor, and a sliding joint was developed as a seat for the runway slab. The runways, built independent of the stable structures, were too extensive and vulnerable for proper weather protection at less than excessive cost and so were not built in very cold weather but started and completed in March.

Runways have continuous outside girders extending 3 in. above slab level as a header stop for the bituminous roadway surfacing. To these girders are anchored a series of slotted concrete posts, into which were set 2 x 8 in. precast concrete plank 9 to 15 ft long. Five lines of plank were set with 4 in. gaps to act as a barricade.

The project was completed and the stables ready for use by April 1. No setback in the racing schedule was necessary.

Lionel K. Levy was architect and Jacob Feld was structural engineer—both of New York City. Yonkers Contracting Corp. was the general contractor.



Sheffield Welded Wire Fabric being used in turnpike construction. 3-inch finish concrete, reinforced with Sheffield Welded Wire Fabric, rests on 7-inch base.

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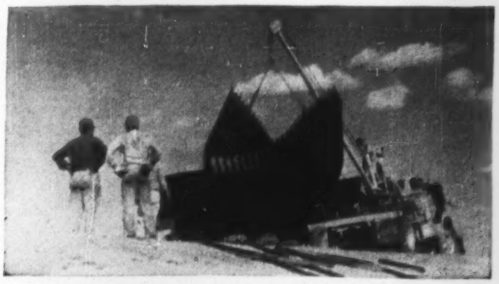

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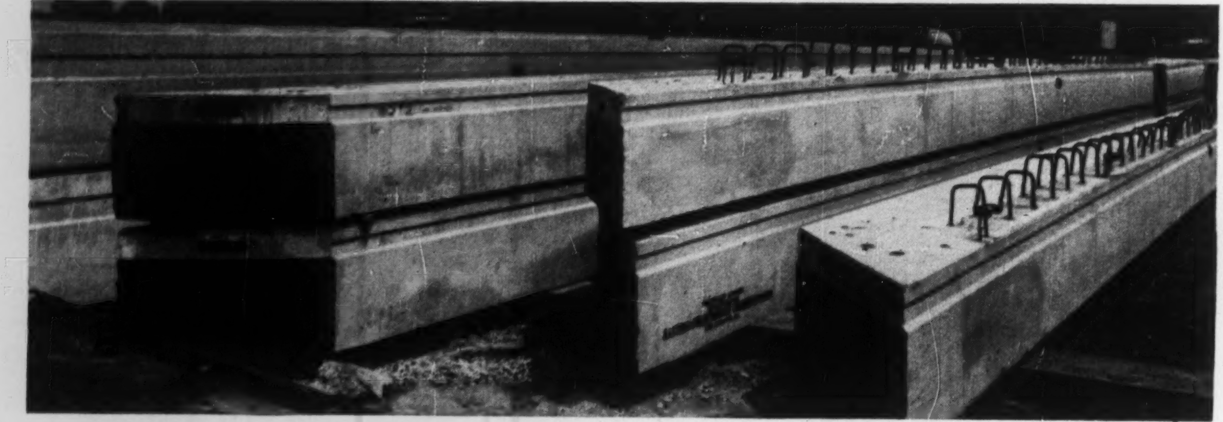

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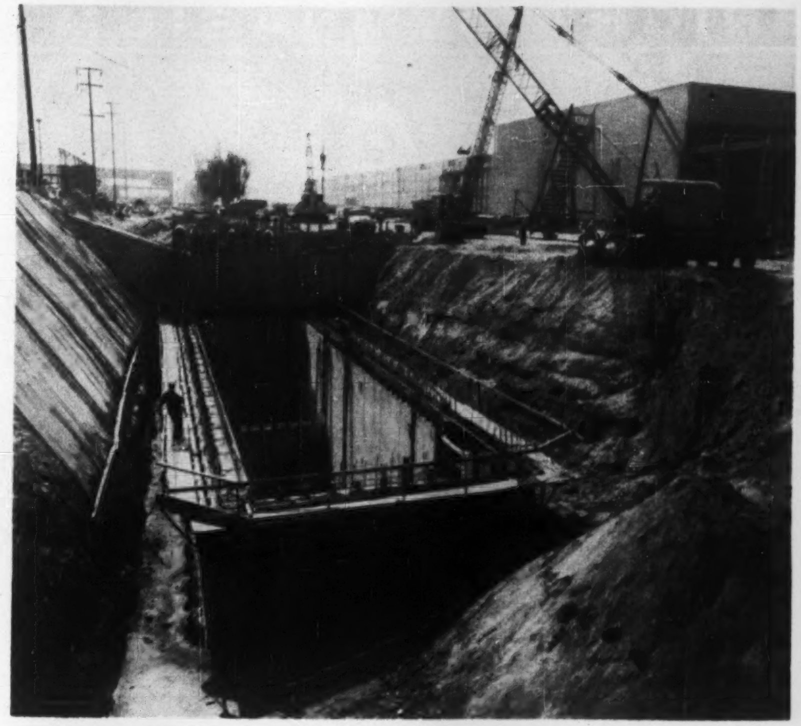
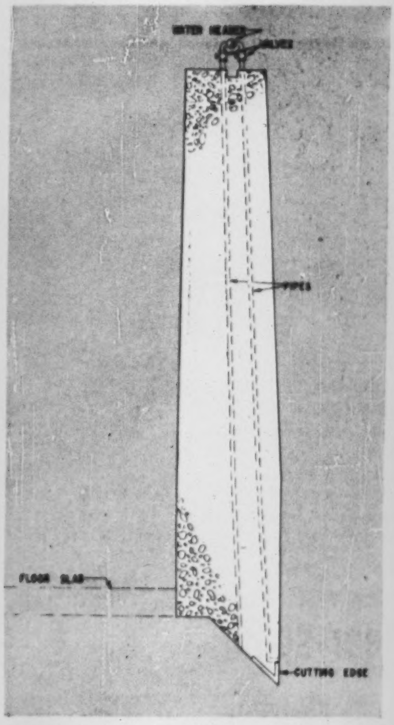


SCALE PIT at Kaiser Steel's Fontana, Calif., mill was installed in two sections. Lower section was sunk as caisson to prevent cave-in of the excavation's steep sides.



CUTTING EDGE of caisson penetrated soil softened by water from wall pipes.

Pit Sunk as Caisson to Avoid Cave-In

Conventional excavation and open-caisson methods were both used during installation of a 50-ft-deep, 20 x 100 ft reinforced concrete scale pit, built as part of the expansion program at the Kaiser Steel Corp. mill, Fontana, Calif.

The scale pit will receive ingot cooling water from a new slabbing mill now under construction. Scale picked up by this water will be settled out in the pit. The water will be returned to the mill for reuse and the scale periodically removed from the pit by clamshell bucket.

The fact that the main-plant power substation was located within 10 ft of the edge of the pit area affected the excavation work. A 26% slope had to be used on the plant side of the excavation after power shovels had reached a depth of 30 ft. Encountering a soil strata of sandy loam at this depth, Kaiser Engineers, the contractors, decided to finish the job by sinking the bottom 30 ft section of the scale pit as an open caisson to eliminate the danger of cave-in and possible undermining of the substation foundations.

• **Forming the caisson**—Forms were constructed at the bottom of the excavation and two lifts of concrete placed to complete that part of the scale pit structure that would be sunk as a caisson.

In the first lift, about 8 ft of concrete was placed in a form built to provide a cutting edge along the perimeter of the concrete base. This edge, projecting down about 3 ft from the 4½ ft base, was faced with 1 in. steel plate.

Built into this section were forty-four ¾ in. dia pipes. The pipes were embedded vertically at 4 ft intervals and angled alternately to either side of the cutting edge. Water was piped under pressure through these conduits to soften the soil under he cutting edge when the caisson sinking began.

After the first lift of concrete totaling 890 tons was placed, this section of the caisson was lifted about 4 in. by thirty-two 50 ton jacks to remove shoring underneath.

When the first section had been lowered and the jacks removed, the second section of concrete was placed, bringing the structure to a height of 30 ft.

The interior face of the caisson was lined with embedded 90 lb steel rails to protect the pit walls from bucket or cable damage during scale removal operations when the pit was completed and in use.

Total weight of the caisson section, including the embedded steel rails, was about 2,100 tons.

• **Sinking the pit**—A 1 cu yd clamshell bucket was used to remove earth from the interior of the pit. Working along the inside face of the pit walls the bucket led the cutting edge by about 30 in. In the sandy loam, the caisson penetrated only about 6 in. at the beginning of the sinking.

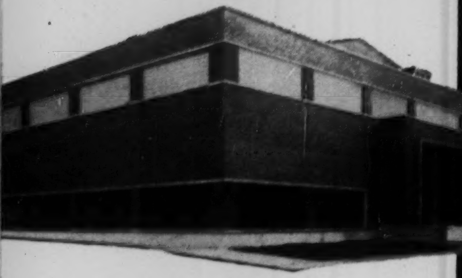
Water at 80 psi was jetted out of the pipes at the cutting edge to soften the soil and aid penetration of he edge. Valves located at the top of the pipe near the header controlled the flow of water to assure uniform softening along the edge and keep the caisson level as it sank.

Averaging 2 ft a day, the excavators took 10 days to reach the final depth of 50 ft below grade.

Hand shoveling was needed to prepare the pit bottom for a concrete slab. On completion of the floor slab, formwork was erected and concrete placed for the top 20 ft portion of the pit.

A. W. Zimmerman, general construction superintendent, W. N. Way, field engineer, and F. W. Wood, area superintendent, were the Kaiser engineers who worked out the method of construction.

A BIG, BRIGHT GYMNASIUM



BLUFFTON HIGH SCHOOL GYMNASIUM

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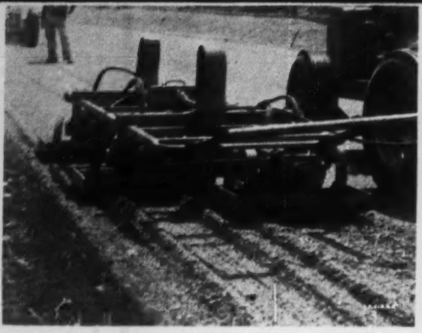

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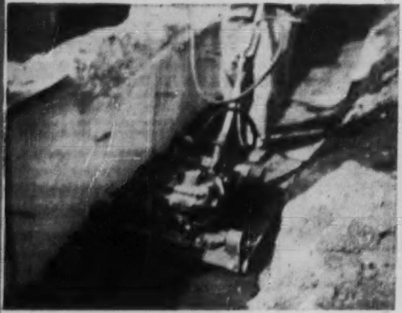

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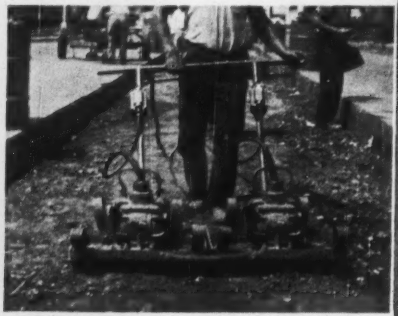

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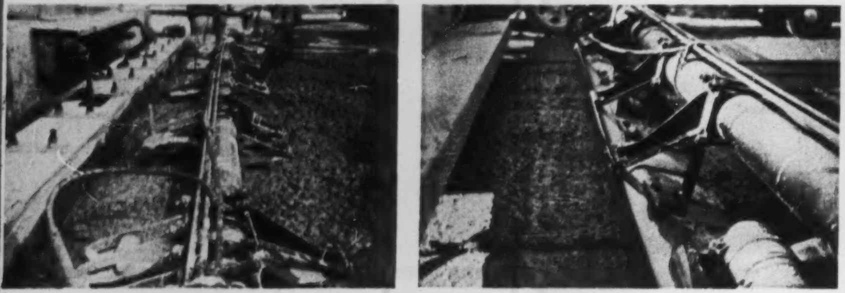

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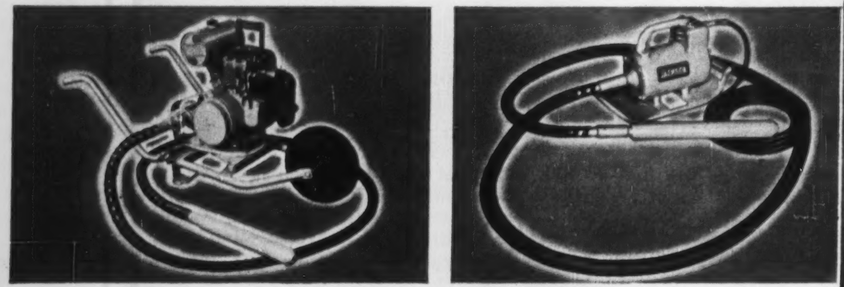

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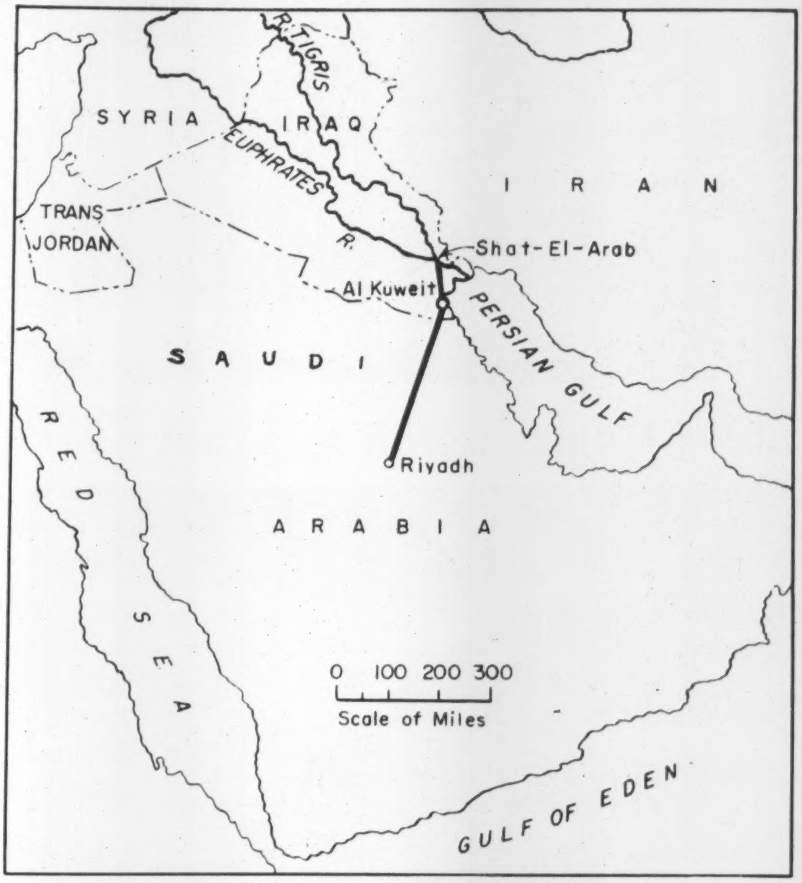

Mid-East Pipelines — For Water This Time

In the Middle East, oil is not the only item drawing interest. The three major oil producers of the Persian Gulf area are also discussing water pipelines.

Of the three oil producers, Iraq, Kuwait and Saudi Arabia, only Iraq is rich with water—thanks to the twin rivers Euphrates and the Tigris. For some years Iraq and Kuwait have been negotiating for a water pipeline from Iraq's Shaft-el-Arab River (formed by the junction of the Euphrates and the Tigris) to the City of Kuwait, 80 miles south. No agreement has been reached as yet.

After King Saud's visit to Iraq last month and the reconciliation of the Hashemite and Saudi dynasties, Saudi Arabia has also asked the Iraq government to supply Saudi Arabia's parched capital, Riyadh, with drinking and irrigation water from the Shatt-el-Arab.

The Iraqi Council of Ministers has agreed to the Saudi request and the matter is now before Parliament. Iraqi minister of agriculture, Rushdi Shalabi, told Parliament that his ministry and the Saudi Water Board were discussing details of the project, but added that no technical studies had been carried out so far.

The project will necessitate a 400 mile pipeline from south of Basrah on the Shatt-el-Arab to Riyadh in the Saudi hinterland. Rushdi Shalabi made it clear that only surplus water would be supplied.

Norwegian Reactor Plant Being Built Underground

A reactor plant now under construction in Halden, Norway, will be located underground. Excavation through the side of a mountain for the reactor hall and entrance tunnel has been completed. This work was finished behind schedule because of poor rock conditions.

An overhead crane with a lifting capacity of 50 tons has been installed in the reactor hall for the placing of the heavier components of the reactor.

Most of the cooling equipment for the radiation shield and concreting of the shield has been completed.

The control building, located outside the mountain, has been completed. Work has begun on the installation of control equipment in this structure.

The reactor will be a heavy-water moderated and cooled, slightly enriched uranium-type reactor.

Four Days Win $450,000 For Kariba Dam Builders

Beating a deadline by four days meant a $450,000 bonus for Impresit Limited, Italian contracting firm building $316 million Kariba Dam project on the Zambezi River in Central Africa (ENR Sept. 6, 1956, p. 71). A race against time to complete the first sections of the dam wall was won despite record floods that held up work for six weeks earlier this year.

Next step at the 400-ft-high dam will be to send the Zambezi flow through a diversion tunnel already built. Ultimate capacity at the dam, which will be reached in 1971, is set at 1.2 million kw.

Canada to Aid Building An Alaska Highway Link

Construction of a $6 million highway into British Columbia's northern interior will be subsidized by the Canadian government during the next four years.

The highway, from Cassiar to Stewart, will open up the province north of the Alaska Panhandle, and connect with the sea and the Alaska Highway.

The subsidy represents an important contribution to the province's 1957 road budget of $70 million—third highest provincial total. The Canadian Good Roads Association predicts another record roadbuilding year.

An association survey revealed a 20% increase in this year's road and street budgets for all governments, with the 1957 total budget standing at $861 million against $715 million spent last year.

Provincial highway budgets account for $604 million or 70% of the total ($485 million in 1956). Ontario is leading the field with a proposed budget of $236 million, followed by Quebec with $119 million.

(International continued on page 56)

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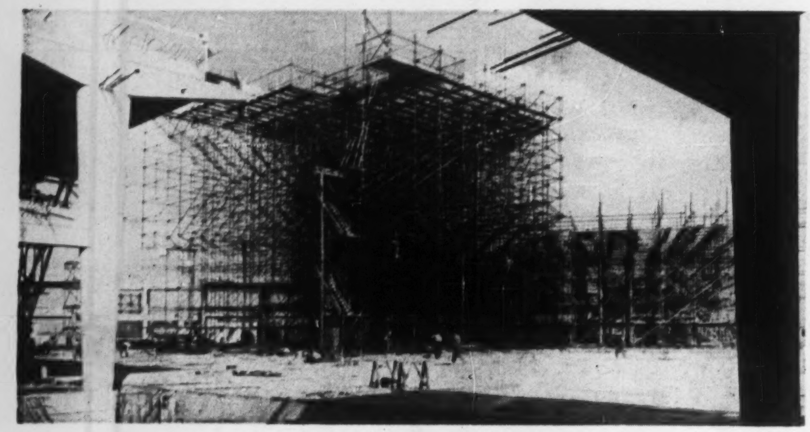
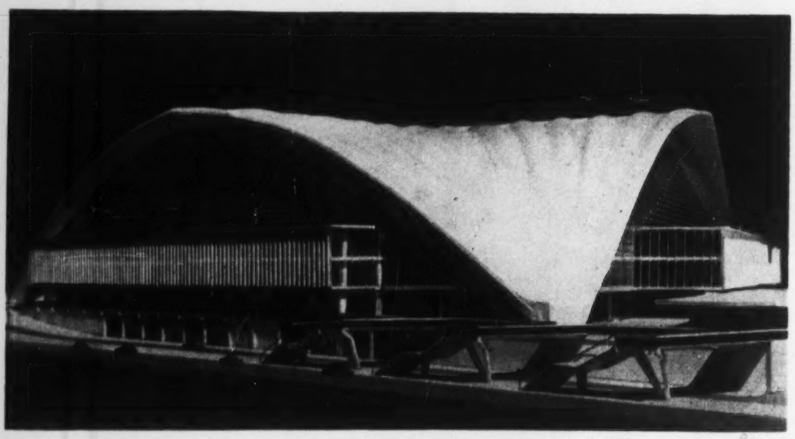


Under Construction in France . . .



. . . Concrete Roof to Span 721 Ft

One of the most spectacular concrete roofs ever undertaken is now shaping up a few miles outside Paris. Supported at only three points, it will cover a 10 acre area and will set a record for concrete spans in buildings.

The project is a new exhibition hall—the Centre National des Industries et des Techniques. It is backed by a group of French industrialists whose aim is to create a showcase where European manufacturers can display their products to buyers from all over the world.

In plan, the structure will be an equilateral triangle. The sides, arching from corner to corner of the triangle, will be 721 ft long. This is nearly four times the 190 ft corner-to-corner distance of the spherical tripod dome built a few years ago at Massachusetts Institute of Technology (ENR May 27, 1954, p. 30), and is reported to be the longest concrete span ever constructed in a building.

Below the arching sides, the three facades of the hall will be glass on light steel framework.

The roof actually will comprise two layers or shells, separated by a space ranging up to 6½ ft. Both the inner and outer shells will be 3.1 in. thick.

Floor space in the hall will total more than 1 million sq ft, distributed among six floors and a mezzanine. This makes it, so say the builders, the world's biggest exhibition hall.

Architects for the project are Camelot, de Mailly & Zehrfuss. Ten companies—including two engineering firms—are combined under the name Societe de Construction de la Defense to construct the project. Cost is estimated at $10 million. Completion is scheduled for late next year.

(*International continued on page* 58)

Robert Groff, owner of Northridge Equipment Rentals, California, takes delivery of his 18th Le Roi Compressor, model 85.

"Here's How I Make Money on Compressor Rentals"

LeRoi Compressors give top performance, require little maintenance, bring maximum profits from satisfied customers.

New units rented out minutes after delivery.

"If I have to make two service calls a month on a rental compressor, I lose the profit on that month's use," says Robert Groff, owner of Northridge Equipment Rentals, Northridge, California.

"That's why I always choose Le Roi and now own eighteen," says Groff. "They run day after day with little care, attention, or upkeep."

Dependability and performance are the cornerstones of Groff's successful business. His customers expect trouble-free equipment, economical in operation, and Groff sees that they get it! No company, he says, can hope to succeed in a rental business if they put their money into inferior equipment.

So much in demand are Le Roi Compressors that the eighteenth unit, shown above, was rented out minutes after delivery.

The Le Roi Air Compressor units rented out by Groff have a capacity of 85 cfm. They're ideal where portability is important . . . they trail well behind vehicles, and are balanced so that one man can easily position them on the job-site.

They're easy to operate, too. One control — the starter button — gives you 85 feet of air at 100 pounds pressure. That's more than ample for powering a heavy breaker. They are a perfect power source for Le Roi Newmatic Air Tools.

There's a big, lockable tool box on each unit — weathertight, and large enough to hold air tools, hose, and accessories.

Other Le Roi Compressors range in capacity from 105 to 600 cfm. All of them feature Le Roi's integral packages — proved air sources with power matched to the compressor by a manufacturer who knows both engines *and* air.

The qualities that make Le Roi air compressors money-makers in rental service are the same qualities that make them the favorite of owners, everywhere.

Whether you rent or buy, Le Roi's can be counted on for dependable, trouble-free operation.

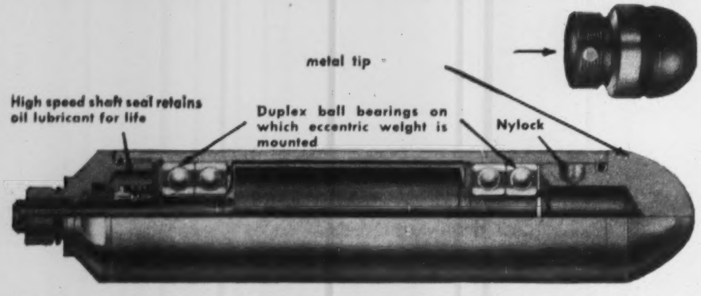
PC-71

LE ROI Division of Westinghouse Air Brake Co., Milwaukee 1, Wisconsin, manufacturers of Cleveland air tools, Tractair, portable and stationary air compressors, and heavy-duty industrial engines. Write us for information on any of these products.

In Concrete Vibrators, it's the WALLOP that counts!

"'Wallop", which is what many contractors call amplitude, is what it takes to vibrate a stiff mix — quickly and thoroughly. Recent tests prove that the efficiency of vibration increases in proportion to the amplitude. Therefore, Stow Manufacturing Co., Binghamton, N. Y., has developed a lightweight, rugged vibrator head that packs a *terrific* wallop

Rugged new Stow 2 HP BU electric vibrator. It has Underwriter's Laboratories listing for 50/60 cycle AC operation.



metal tip
High speed shaft seal retains oil lubricant for life
Duplex ball bearings on which eccentric weight is mounted
Nylock

Take a look at this vibrator head. It is 10 inches long, and available in diameters of 1⅝, 2 and 2½ inches, capable of 9000 VPM. Vibrations are achieved by use of an eccentric weight mounted in special high speed duplex ball bearings at each end. The outside of the head is case hardened, for extra long wear, and it has a replaceable tool steel tip. Stow estimates that these two improvements alone will double the life of the heads.

Big 5.6 HP Stow AG vibrator

Construction men report that they like the light weight, the long life, the low replacement cost, and the terrific wallop of these heads. Weight of the 1⅝" head is about 5 lbs.; the 2" head about 7½ lbs.; and the 2½" head, about 9 lbs. The cost of this head is less than ⅓ the cost of expensive "motor-built-in" type heads. The 1⅝" head is also available with a hard rubber tip for use where plywood forms are being used.

For more information about the complete line of STOW concrete electric and gasoline vibrators, vibrating screeds and rotary trowels, contact your STOW distributor by looking in the yellow section of your telephone directory under "Concrete Vibrators" or write for STOW Catalog 560.

STOW

STOW MANUFACTURING CO., 19 Shear Street, Binghamton, N. Y.

Submarine Breakwaters To Protect Brazil Beaches

Submarine breakwaters will be built to protect the beaches of Olinda, former capital of the state of Pernambuco, Brazil. The city has sustained continual damage from sea erosion that has destroyed homes and buildings every year.

The French "Laboratoire Sogreah de Grenoble," developers of the tetrapod (ENR Jan. 8, 1953, p. 32) was retained, and after six months research its experts came to the conclusion that the transverse current guides—employed to date as barriers against the sea—were inadequate because of the strong prevailing winds.

Construction of three submarine breakwaters is planned to start within a month and to be completed in one year at a cost of $1.1 million. The "interlocking" type breakwaters will be 150, 600 and 600 meters long, respectively, and will all be constructed at a short distance from the beach.

Technicians point to two salient factors as being the main cause of the phenomena of the erosions affecting the beaches of the town—the direction of the winds and the presence of an interrupted barrier of reefs.

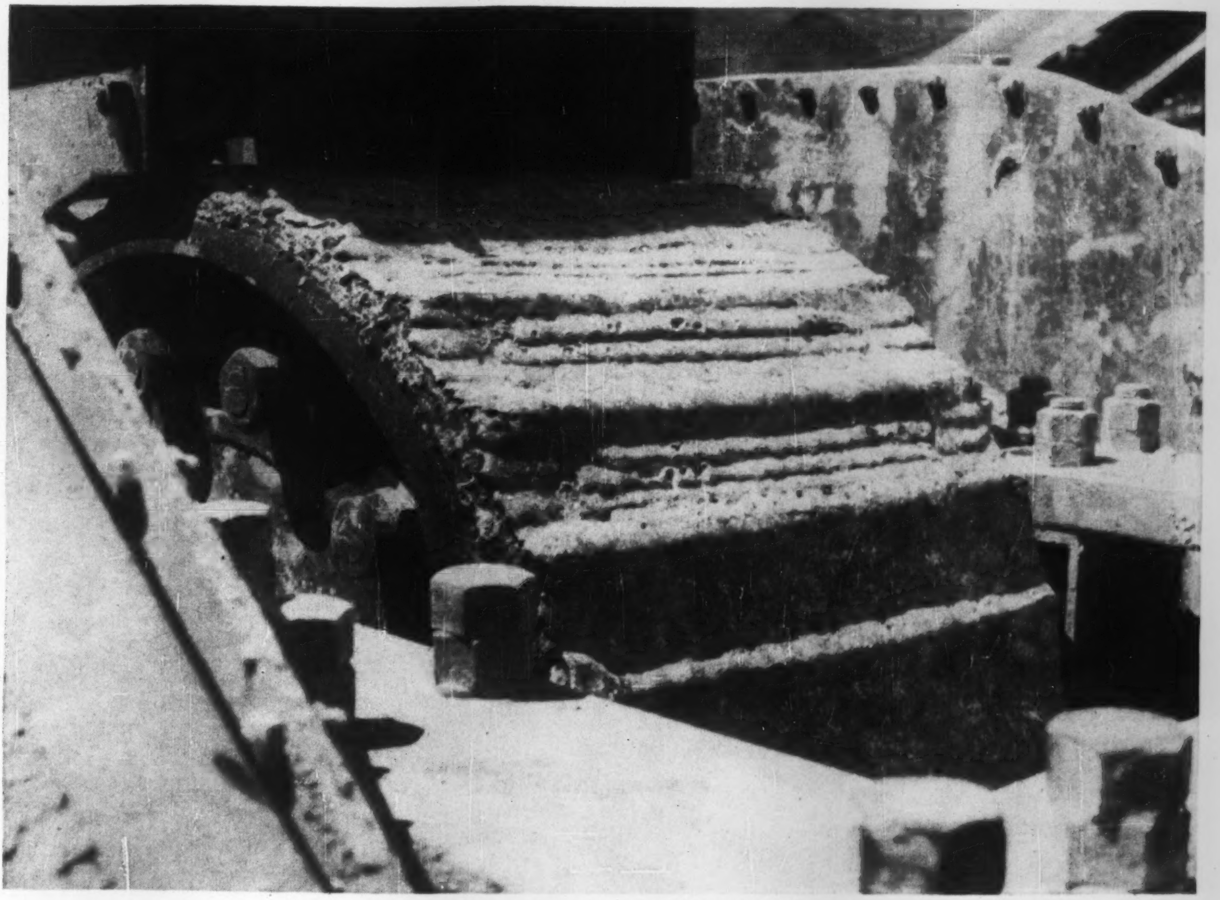
Driving Time Is Shortened Between U.S.–Mexico City

Expected to be completed this month is a new route that Mexican engineers say will be the shortest and safest road between Mexico City and the United States.

The new road will link the Texas cities of Eagle Pass and Laredo with the Mexican capital on a route that eliminates dangerous mountain driving. When the last stretch of paving is finished this month, driving time over the shortest existing highway will be cut by at least seven hours.

At present, three highways link the U. S. and Mexico City. The longest—to the west—enters Mexico at Nogales, is 1,550 miles long and requires an estimated driving time of 31 hours. The central route, entering through El Paso, is 1,330 miles long, has a driving time of 28 hours. An eastern route is only 760 miles long, but takes about 23 hours to drive because of the more than 200 miles of rugged mountain driving required. Known as the Laredo Highway, it was opened in 1936.

The new road, under construction farther inland from the Gulf of Mexico, is 33 miles shorter than the Laredo Highway will eliminate mountain driving and, it is estimated, will cut driving time to about 15 hours.



Since their last major rebuilding, this 18" x 30" Pioneer roll crusher has produced 30,000 tons of aggregate. Twice-a-week touch-ups with Stoody 100 hold wear to a minimum.

STOODY SEMI-AUTOMATIC HARD-FACING helps maintain road schedule in HIGH SIERRAS

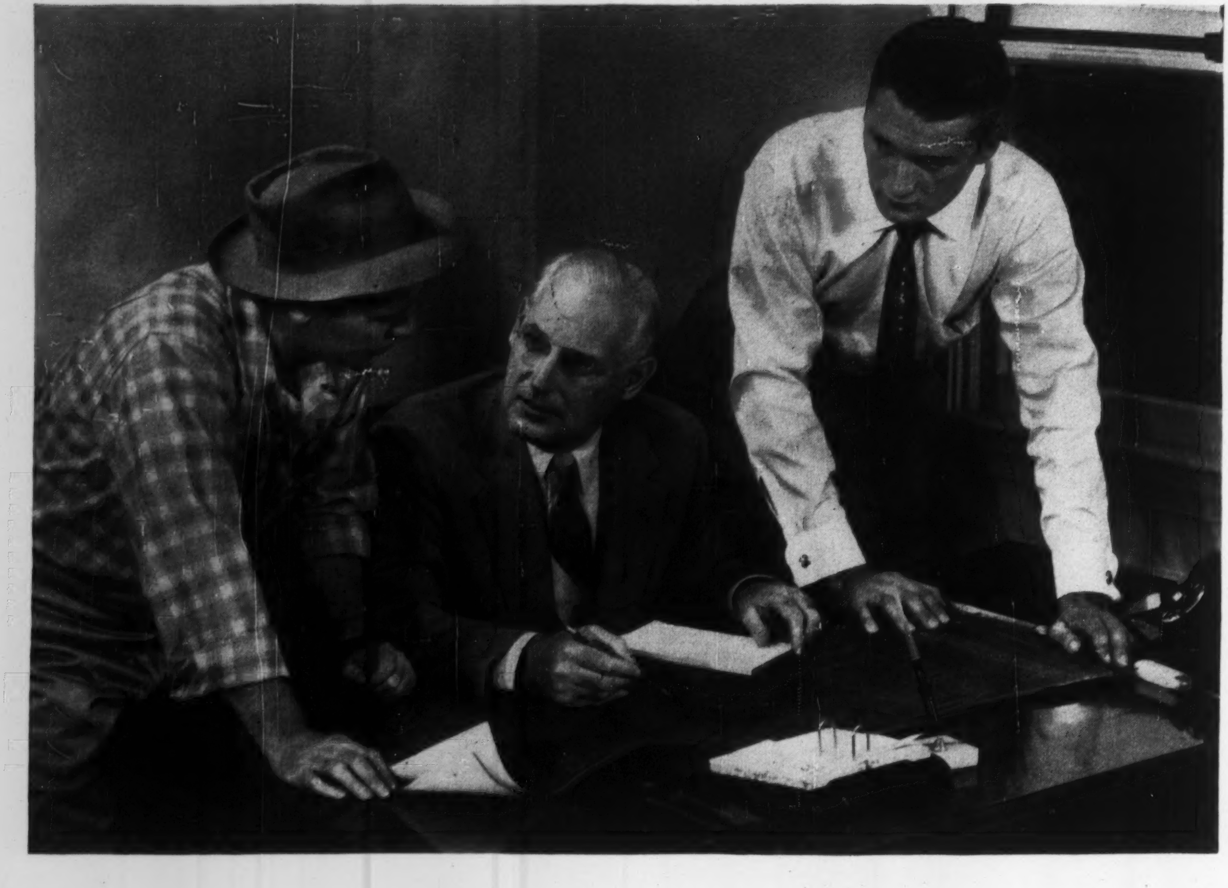
A new 16½ mile State Highway between Shaver Lake and Huntington Lake in the high Sierras was recently completed by Phoenix Construction Co. of Bakersfield, California. One interesting feature of the job was the preparation of aggregate which was supplied by portable crushers operating near the site. Material used was quarried blue granite. Primary reduction was effected by jaw crushers followed by a final roll crushing operation. 210,000 tons of aggregate were required, as well as production of sand from the same material. Crusher rolls consequently suffered considerable wear.

The crusher corrugations were completely rebuilt with Stoody Manganese, spacing about 3" peak-to-peak. These were overlaid with Stoody 100 applied with the semi-automatic welder. Wear was never permitted to reach the manganese shell thereafter. During shut-downs, corrugations were retouched with Stoody 100, as required, restoring full efficiency for the following shifts.

Facilitating maintenance work is this portable semi-automatic welding machine. Quickly hauled to the site, it is dismounted from the truck for use.

Hard-facing methods for most successfully maintaining all your wearing equipment are fully described in the Stoody Guidebook and folder covering semi-automatic procedures. Ask your Stoody dealer for a copy (see the "Yellow Pages" of your phone book) or write direct.

STOODY COMPANY
11976 East Slauson Avenue
Whittier, California



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If you are planning to bid on a highway contract, Liberty Mutual specialists will provide you with a detailed estimate of your insurance costs with no obligation on your part whatsoever.

Liberty Mutual underwriters and engineers will work with you . . . analyze the problems you will face in the proposed job . . . help to make sure your bid contains a realistic estimate of your insurance costs. These men know the road building business, for Liberty insures hundreds of highway contractors across the country. Liberty Mutual has insured contractors on almost every major superhighway built in the United States in recent years.

If you would like Liberty Mutual to help you prepare an insurance estimate for your bid on a highway contract, write Mr. Parker M. Morrell, Liberty Mutual Insurance Company, Boston 16, Massachusetts.

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Contract Invalidity

If prime contract fails, so does the subcontract

The invalidity of a general contract renders a subcontract unenforceable. Unless there would have been a valid contract except for the actions of either party, neither party can claim damages from the other.

Earlier this year, the Supreme Judicial Court of Massachusetts dismissed an action filed by a subcontractor against a general contractor under the following circumstances: The Commonwealth of Massachusetts awarded a contract for hospital construction to a general contractor. The glass and glazing and non-ferrous metal work were subcontracted to the plaintiff. Later, the general contract was ruled invalid, and the subcontractor was notified he could not proceed under either of his subcontracts. Although the subcontractor had not commenced work, he had incurred some expense in his preparations for the job. The subcontractor sued for damages, including loss of profits.

In dismissing the action,[1] the court said: "It is settled by our decisions that one who has bound himself by an absolute agreement for the performance of something not in itself unlawful is not released from his obligation by the mere fact that in consequence of unforeseen accidents the performance of his contract has become impossible; he must respond in damages for the breach of his agreement. But it is equally well settled that where from the nature of the contract it appears that the parties must from the beginning have contemplated the continued existence of some particular specified thing as the foundation of what was to be done, then, in the absence of any warranty that the thing shall exist, the contract is to be construed not as a positive contract, but as subject to an implied condition that the parties shall be excused in case, before breach, performance becomes impossible from the accidental perishing of the thing without the fault of either party. . . . The misfortune which has occurred releases both parties from further performance of the contract and gives no right to either to claim damages from the other."

The court took the position that the "validity of the general contract was tacitly assumed by both parties" and that the obligations under the subcontracts were subject to that condition. The general contractor was not responsible for failure of that condition, the court observed, because the invalidity rested on a technicality established by an earlier court action; had the technicality not occurred, the general contractor would not have been the lowest bidder and the general contract would not have come into being.

(1) Boston Plate & Window Glass Co. v. John Bowen Co., Inc., 141 N. E. 2d 715, Supreme Judicial Court of Mass., April 12, 1957.

Liability for Safety

Owner held liable for injuries to a worker

An owner for whom construction work is being done and the contractor doing the work are required to see that the premises are reasonably safe for performance of the work.

In a New York case,[1] for example, the City of New York was found guilty of negligence in failing to provide a contractor's employees with a safe place to work.

The suit against the city was started by a workman injured during construction of a sewer. The injury occurred when the workers broke through a bulkhead of a live sewer which flooded the trench the workers were in.

The city named the contractor as a third-party defendant. The court found as a fact that the city had been negligent because it had constructive notice of the dangerous condition that caused the injury, and gave the employee a judgment against the city. But it also gave the city a judgment in the same amount against the contractor because the contract contained a clause indemnifying the city against damages resulting from negligence or carelessness of the contractor. There was evidence that the city's resident engineer had specifically instructed the contractor's field engineer not to cut through the bulkhead until a later date and that the instructions were disregarded.

In summarizing the city's and contractor's obligations to the employees, the court said: "It is well settled that there was a duty on the part of the owner of the sewer, the City of New York, to provide plaintiff, the employee of an independent contractor, with a safe place to work. In Hess v. Bernheimer & Schwartz Pilsener Brewing Co., 219 N. Y. 415, 418, 114 N. E. 808, the court said; 'The duty of the owner to the employees of the contractor is the duty owed by an employer to his employee in such a case. Sullivan v. New Bedford Gas & Edison Light Co., 190 Mass. 288, 76 N. E. 1048; Crimmins v. Booth, 202 Mass. 17, 88 N. E. 449; Pettingill v. William Porter & Son. 219 Mass. 347, 107 N. E. 269. The duty at common law was, inter alia, to furnish a safe place to work. Coughtry v. Globe Woolen Co., 56 N. Y. 124' ".

Quoting from Haefeli v. Woodrich Engineering Co., 255 N. Y. 442, the court added: "An occupant of land owes to the servants of an independent contractor, employed to work thereon, the duty of exercising ordinary care to render the premises reasonably safe for the performance of the work. If such a duty is owed to the employees of an independent contractor, all the more is it owing to the contractor himself, for the latter has contractual relations directly with the occupant while the former have none. The restatement sums up the matter by saying that an occupant is liable for bodily harm caused to business visitors if he knows, or by the exercise of reasonable care could discover, the dangerous condition of his premises and fails to make the condition reasonably safe, or to warn them of the condition and the risk involved therein. Section 213."

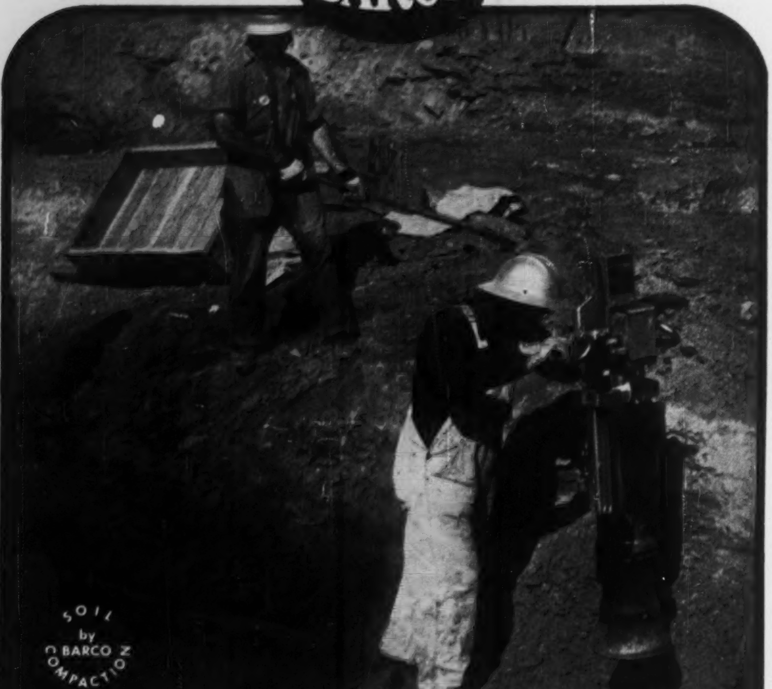
(1) Steeley v. City of New York, 157 N.Y.S. 2d 734, N. Y. Supreme Court, Queens County, Oct. 16, 1956.

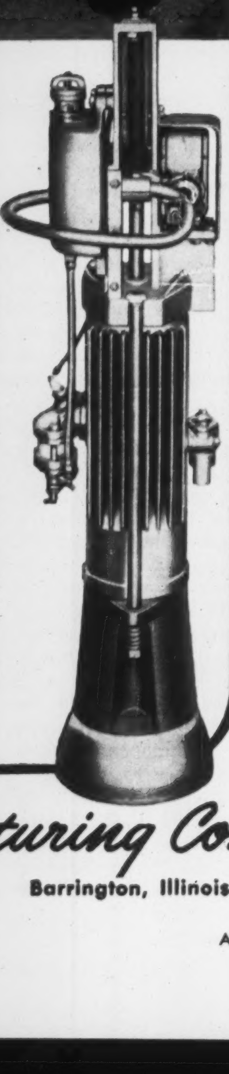
One May Rescind Contract When Breach Is Committed

If one party to a contract fails to perform or breaches the contract, the other party need no longer continue to perform his obligations under the contract and may sue for damages or seek to recover for services.

A few months ago, an Illinois court relied on this legal doctrine in relieving a land purchaser from his obligations under a contract. The purchaser had agreed to assign his right to purchase a piece of property to a third person, the assignment not to be effective until the latter had made a specified payment. The assignee committed an anticipatory breach by informing the purchaser he wouldn't be able to make the payment, and this ripened into a breach of contract when he failed to make the payment. Under such circumstances, the court held,[1] the purchaser was entitled to rescind the contract and to purchase the property in his own name without liability to the assignee.

Quoting from the Restatement of





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Contracts, Section 422, the court said: "A breach or nonperformance of a promise by one party to a bilateral contract, so material as to justify a refusal of the other party to perform a contractual duty, discharges that duty".

In the field of construction contracts, the principle is the same. A common case is where a contract provides for monthly payments as work progresses. Refusal by the owner to make the periodic payments excuses the contractor from further performance. He may then elect to sue for the reasonable value of work performed, or sue for damages for breach of contract.[2]

(1) Eager v. Berke, 142 N.E. 2d 36. Supreme Court of Illinois, May 20, 1957.

(2) Pelletier v. Masse, 143 A, 609.

Contractor's Negligence And an Owner's Liability

As a general rule, one who employs an independent contractor to perform work is not liable for damages sustained by others as a result of the negligent acts of the independent.

But like all rules, this one has its exceptions, too. Liability does attach "where the employer personally interferes with the work, and the acts performed by him occasion the injury; where the thing contracted to be done is unlawful; where the acts performed create a public nuisance; and where an employer is bound by statute to do a thing efficiently and an injury results from its inefficiency".[1]

A U. S. District Court in Pennsylvania, for example, recently held an employer liable for the negligent death of an independent contractor where the work was constantly supervised by the employer's own field engineer, and had retained control over the work.[2]

(1) Berg v. Parsons, 156 N. Y. 109, 30 N.E. 957.

(2) Spinozzi v. E. J. Lavino and Company, 243 F.2nd 80.

Contract Construction Invokes Several Rules

When a written contract contains conflicting provisions, the specific provisions usually prevail over the general ones, and written provisions take precedence over printed ones.

Set forth below are several observations by courts in Arkansas.

"It is well settled Arkansas law that in construing a written instrument it is the duty of the court to read the instrument as a whole giving effect, where possible, to all of its provisions and

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A Bucyrus-Erie excavator stays on the job, continues to earn. Each model is engineered and built from boom point to mounting for a specific rated capacity. There's no overdippering to create "new" models, no overpowering that shortens the useful life of the machine by excessive wear.

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Your Bucyrus-Erie excavator *stays young* with a minimum of maintenance, keeps its original performance values for many years of money-making service. That means high resale value, too. Simple design and strong, large parts — few in number and easily accessible — assure ease and economy in upkeep. Main machinery is securely anchored on one-piece frame, keeps perfect alignment.

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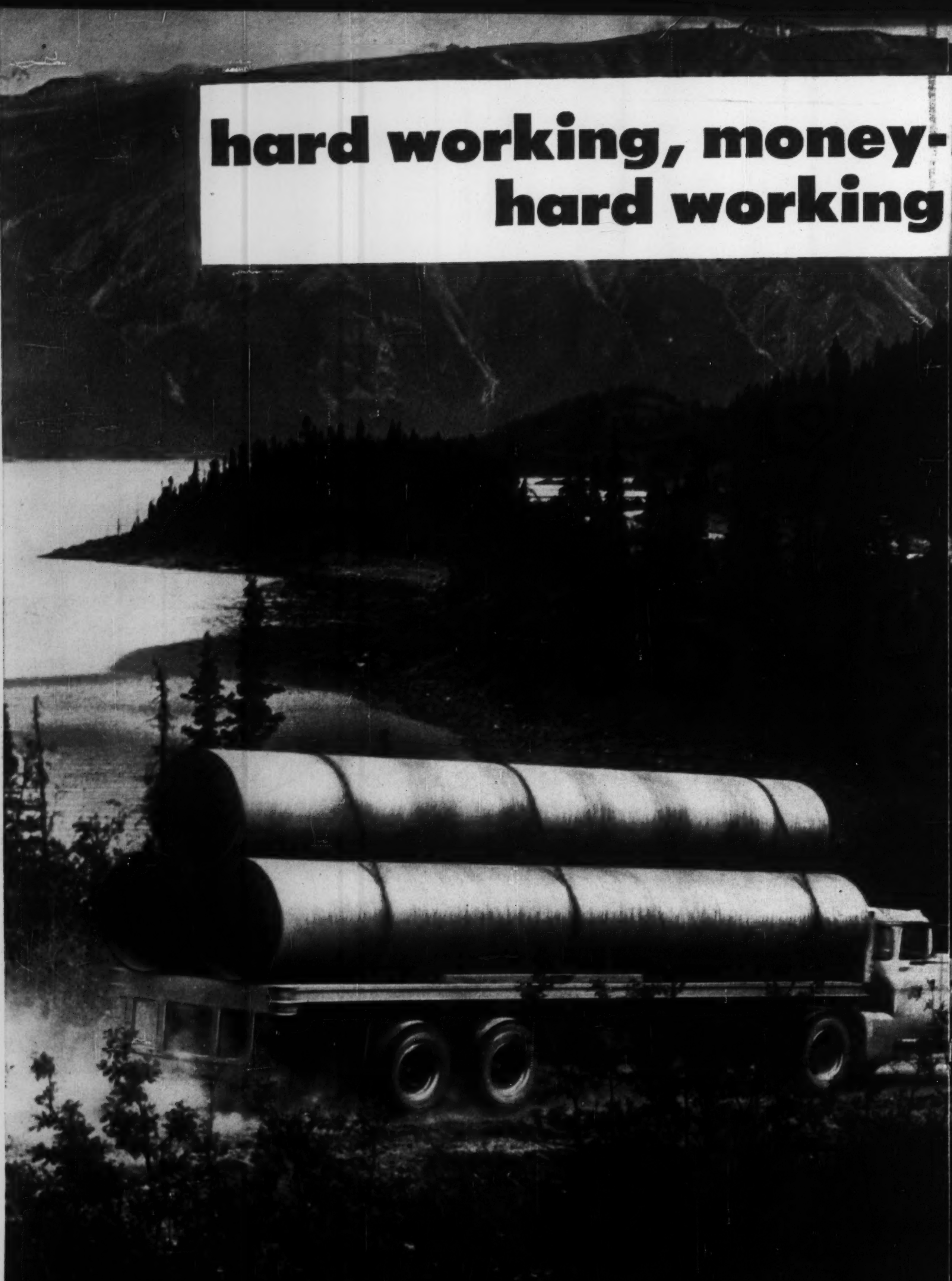

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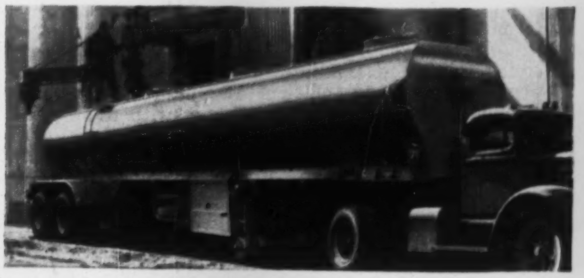

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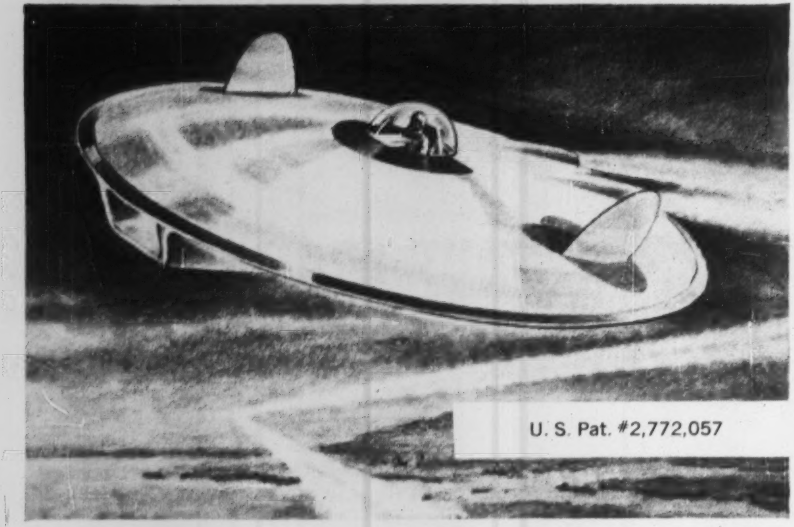


saucer secret?

Whose incredible design is the flying saucer?

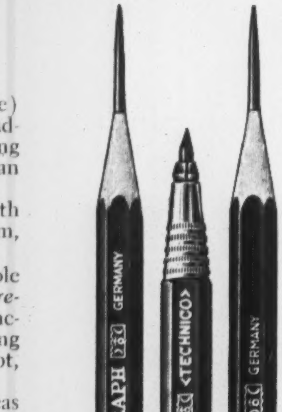
These flying objects (unidentified, of course) maneuver at high speed, with human-crushing suddenness. Their unearthly behavior poses a perplexing problem to imaginative designers: how might man survive in them?

John C. Fischer, Jr. approached the problem with this circular aircraft and its unique control system, U. S. Pat. #2,772,057.

This "saucer's secret" is a rotatably adjustable shell (upper) and a pilot's compartment which *prerotates* toward the direction to be flown. The functional design "humanizes" saucers because the rotating provisions distribute *g-forces* laterally on the pilot, minimizing blackouts.

No one can be sure which of today's new ideas will become reality tomorrow. But it will be important then, as it is now, to use the best of tools when pencil and paper translate an idea into a project. And then, as now, there will be no finer tool than Mars—from sketch to working drawing.

Mars has long been the standard of professionals. To the famous line of Mars-Technico push-button holders and leads, Mars-Lumograph pencils, and Tradition-Aquarell painting pencils, have recently been added these new products: the Mars Pocket-Technico for field use; the efficient Mars lead sharpener and "Draftsman's" Pencil Sharpener with the adjustable point-length feature; and—last but not least—the Mars-Lumochrom, the new colored *drafting* pencil which offers revolutionary drafting advantages. The fact that it blueprints perfectly is just one of its many important features.


2886 J.S.STAEDTLER MARS-LUMOGRAPH GERMANY
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1001 J.S.STAEDTLER MARS-LUMOGRAPH <TECHNICO>
2H
2615 J.S.STAEDTLER MARS-LUMOCHROM GERMANY

The 2886 Mars-Lumograph drawing pencil, 19 degrees, EXEXB to 9H. The 1001 Mars-Technico push-button lead holder. 1904 Mars-Lumograph imported leads, 18 degrees, EXB to 9H. Mars-Lumochrom colored *drafting* pencil, 24 colors.

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reconciling apparent conflicts where such can be done; where, however, an instrument contains irreconcilable conflicts, them the general provisions must yield to the specific." The court cites numerous cases to sustain this principle of law.[1]

The court, quoting from another case,[2] stated: "Where there are two clauses of a contract in any respect conflicting, that which is specially directed to a particular matter controls in respect thereto over one which is general in its terms, although within its general terms the particular may be included; because when the parties express themselves in reference to a particular matter the attention is directed to that, and it must be assumed that it expresses their intent, whereas a reference to some general matter within which the particular may be included does not necessarily indicate that the parties had the particular matter in mind."

"Another well established rule of construction is that where there is an irreconcilable conflict between written and printed portions of a contract, the former govern. As to this rule American Jurisprudence says: 'It is a well-settled rule of law that where part of a contract is written and part is printed, and the written and printed parts are apparently inconsistent or there is reasonable doubt as to the sense and meaning of the whole, the words in writing will control. The reason greater effect is given to the written than to the printed part of an agreement, if they are inconsistent, is that the written words are the immediate language and terms selected by the parties themselves for the expression of their meaning, while the printed form is intended for general use without reference to particular objects and aims.'"

(1) United States v. R. D. Wilmans & Sons, Inc., 147 F. Supp. 232, U. S. District Court of Arkansas, Dec. 21, 1956.

(2) Mutual Reserve Fund Life Association v. Minehart, 72 Ark. 630, 83 S.W. 323.

Non-Overhead Cost Items In Cost-Plus Contracts

Items of cost allowable in cost-plus contracts are fairly extensive.

"In cost-plus contract, as a general rule, premiums for workmen's compensation, insurance, social security and labor taxes, hauling, storage, and operating expenses resulting from the use of equipment are reimbursable costs and not overhead. See House v. Fessill,

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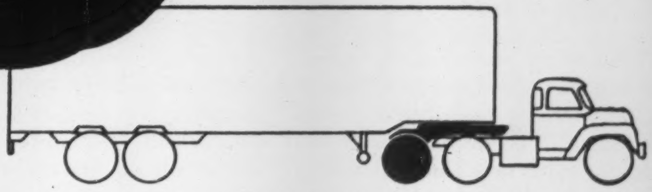
This "extra axle" conversion assembly, built exclusively by Calumet Tonnage Master Fabricators, Inc., for the Fruehauf Trailer Company, enables truck operators to get maximum performance from their existing equipment.

Riding behind a two-axle tractor, a Tonnage Master provides increased load carrying capacity, reduction in tractor wheelbase, improved traction on curves, increased tire life as well as easier riding through utilization of more springs.

All components—except springs and axles—are fabricated from Youngstown's Yoloy "E" high strength-low alloy steel. This versatile steel was wisely specified to provide the units with longer life, increased resistance to shock, vibration and corrosion, as well as lighter—yet stronger—construction.

Youngstown's complete family of Yoloy steels is available in Sheets, Plates, Bars, Shapes, Cold Drawn Bars and Tubular Products. Complete informative Data Sheets on each Yoloy steel will be promptly sent upon request.

Tonnage Master Unit



Combination of a two-axle tractor, Tonnage Master and a dual-axle trailer provides five axles for carrying top loads at greater safety.

Write for these free pamphlets in The Yoloy Family series:

YOLOY "E"	High Strength Low Alloy Steel—standard applications
YOLOY	High Strength Low Alloy Steel—special applications
YOLOY "S"	Higher Strength Steel for increased service life
YOLOY "C"	Corrosion Resistant Grade for deep forming
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"That National Torque Converter certainly speeds up... and smooths down...shovel operations"

"Speeds up and smooths down" is the way an Alabama coal stripping operator described the job a National Torque Converter was doing on his new Lima shovel . . . and it would be hard to tell the story any better in several times that many words.

The National Torque Converter gives the operator a velvet-smooth flow of power for crowding, with immediate shock-free power multiplication if resistance is encountered . . . provides the positive, immediate, powerful response required for high-speed hoisting and for swing, travel and return. The engine cannot be stalled, greater capacity is obtained without shock loading, maintenance is reduced on all driving and driven mechanisms, cables, gears, engines and clutches last longer between overhauls.

National Torque Converters come in a full range of sizes from 100 to 1000 hp, and offer a variety of characteristics to meet individual job needs. You can specify them on the shovels and cranes of many major shovel manufacturers. For details, just write:

THE NATIONAL SUPPLY COMPANY
INDUSTRIAL PRODUCTS DIVISION
Two Gateway Center, Pittsburgh 22, Pa.
Pace-setters in the progress of industrial power transmission

188 Md. 160, 51 A. 2d 669; Citizen's State Bank v. Gentry, 20 Cal. App. 2d 415, 67 P. 2d 364."[1]

(1) Vowels v. Witt, 308 P. 2d 415, District Court of Appeals of California, Mar. 19, 1957.

Effect of Releases

General release held bar to claims for extra work

A general release running from a contractor to an owner bars the contractor from seeking, at a later date, compensation for extra work performed prior to the release.

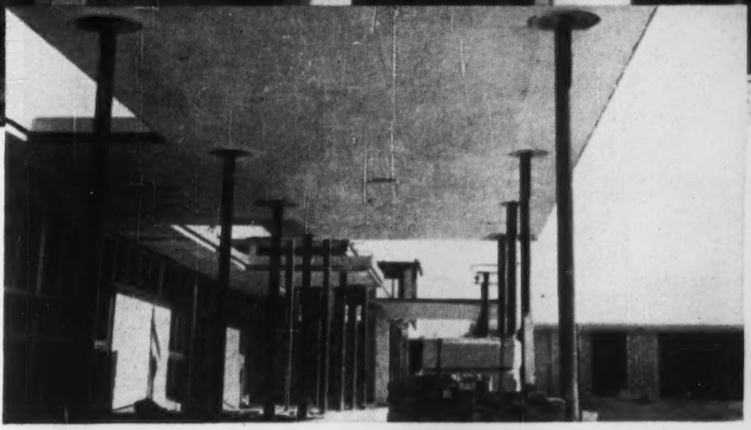
The effect of a general release was considered recently by the Supreme Court of Rhode Island.[1] The release before the court was signed by the general contractor, subcontractors and materialmen. Its purpose was to prevent the filing of mechanic's liens. Prior to the release, the general contractor had been paid $800 for extra work performed. The release was general in terms and released the owner from "all claims for payment."

The general contractor, who later sued for an additional $2,570 for extra work performed, claimed that the release was not intended to cover claims for extra work.

In ruling that the contractor was not entitled to recovery, the court said he should have specifically provided that the release did not cover claims for extra work if that was his intention. "The plaintiff's (contractor's) release," the court observed, "is in general terms and is apt and adequate to cover both the principal contract and extras. It was written by him, and we can see nothing in the surrounding circumstances which we have outlined to limit its application. In Swinburne v. Swinburne, 36 R. I. 255, at page 262, 90 A. 121 at page 124, the court stated: 'The rules of construction applicable to a release are the same at law and equity; the primary rule being that the intention of the parties, as shown by the instrument itself in its entirety, and not by matters outside of the writing, must govern. It is to be construed from the standpoint of the parties at the time of its execution, and evidence is admissible to show the surrounding circumstances.' It is because of the last sentence of that quotation that we have considered the surrounding circumstances."

(1) La Belle v. Di Stefano, 131 A. 2d 814, Supreme Court of Rhode Island, May 15, 1957.

NOW . . . Get better control of concrete set during warm weather



Construction progress photographs of Key West High School, Key West, Florida.

Architect: Wm. H. Merriam, Miami

Contractor: L. W. Ross, Miami

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This economical and efficient admixture retards the initial set of concrete and mortars! It gives you effective job control in designing, mixing, placing, and finishing concrete over a wide range of job conditions. In addition, you get these important results at low cost:

1. *Greater ultimate strength*—Up to 40% higher ultimate strength!
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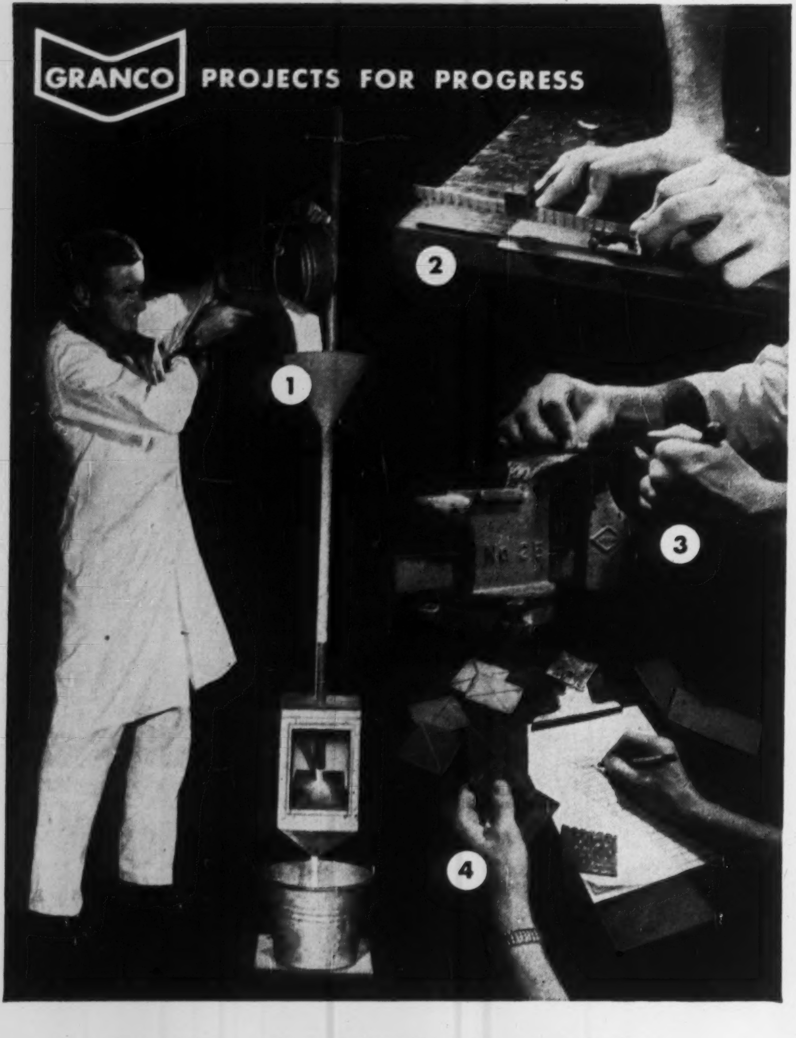

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Probably no construction material under the sun takes rougher punishment than steel deck. Bundled, stacked and often slammed into place, these sheets need sturdy protection against abrasion, damage and rust. To find a tough, tightly adhering paint for the job, Granco engineers put hundreds of sample coatings through severe laboratory tests. In the photo above, for example, you see how . . .

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Obituaries

Morton C. Tuttle, 82, president of Morton C. Tuttle Co., construction management firm, died recently in Newton, Mass. Mr. Tuttle was for many years general manager of Aberthaw Construction Co. of Boston, prior to 1923, when he formed his own concern.

Louis D. Kelsey, 74, civil engineer at the U. S. Naval Air Station on Whidbey Island, died July 20 at Alderwood Manor, Wash. An Iowa State College graduate, he had held the posts of city engineer for Aberdeen, Wash., and city manager for Fairbanks, Alaska.

Richard A. Latter, structural engineer for H. K. Ferguson Co., died July 20 in Berea, Ohio. Mr. Latter was a graduate of Purdue University in 1937.

Ben J. Collier, 66, who was director of Mississippi's State Aid Rural Road Division since its creation in 1954, died July 21. A past president of the Mississippi Society of Professional Engineers, Mr. Collier had been Coahoma County engineer for 24 years.

Frederick W. Kellberg, 58, civil engineer, died July 25 in Oakland. Mr. Kellberg was senior partner in the firm of Kellberg, Paquette & Maurer, San Francisco consulting engineers. A graduate of the University of California, he had been in private practice in San Francisco since 1929. He was structural consultant on such projects as the Cow Palace, the Equitable Life Assurance Society Building and the State Public Health Building in Berkeley.

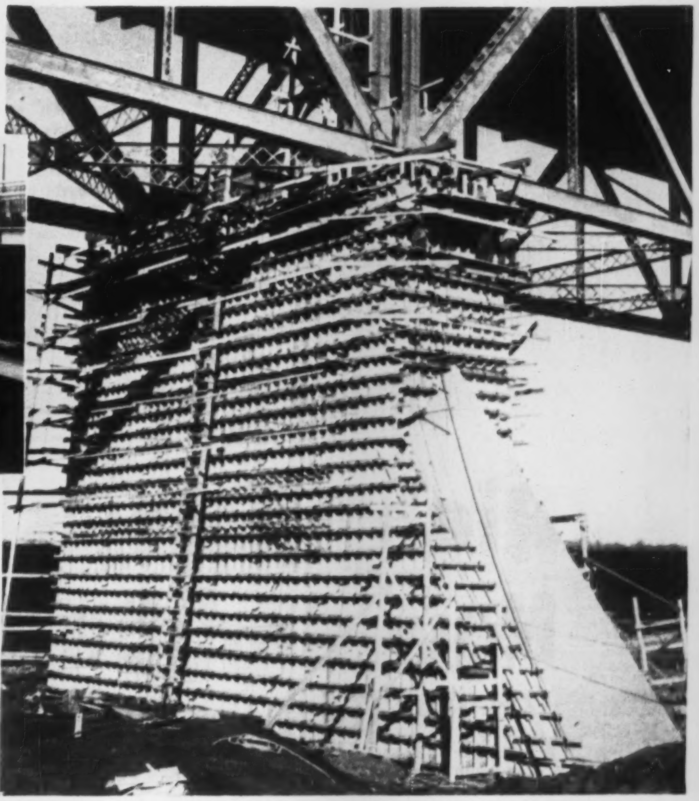
Victor B. Higgins, Jr., contractor of Greensboro, N. C., died July 28. Mr. Higgins graduated as a civil engineer from Clemson College, in 1910, and was a past-chairman of the North Carolina State Licensing Board for Contractors, a national director of the Associated General Contractors of America, and had served a term as Mayor of Greensboro.

David D. Clerk, 56, Canadian consulting engineer, died Aug. 1 in Quebec City, Canada. Mr. Clerk formerly was president of the Provincial Department of Agriculture's Drainage Commission.

David M. A. Salls, 69, retired civil engineer, died Aug. 6 in Nyack, N. Y. Mr. Salls was graduated from St. Lawrence University in 1911 and later from Tufts Engineering School. For many years he was president of Seaboard Weatherproofing Co. in New York City.

Consulting Engineer: Dr. P. L. Pratley
General Contractor: Dominion Bridge Co. Ltd.
Substructure Contractor: Atlas Construction Co. Ltd.
Concrete Contractor: Intrusion-Prepakt, Ltd.
Photos: Courtesy of Roads and Engineering Construction

Piers in foreground have been enlarged with Prepakt concrete, completing the initial stage of a complex bridge reconstruction project.



Prepakt concrete was used to enlarge eleven piers of the Jacques Cartier Bridge, demonstrating the advantages of I-P methods — high strength, ease of placement and flexibility of operation.

Prepakt speeds reconstruction of St. Lawrence Seaway bridge

Intrusion-Prepakt, Ltd. recently played a vital role in the reconstruction of the Jacques Cartier Bridge at Montreal. The highly complex project was undertaken to provide minimum clearance of 120 feet for ocean-going vessels soon to use the St. Lawrence Seaway canal. Fourteen spans of the bridge, a total of 2625 feet in length, will be jacked up to new elevations on raised piers, a new end span will be inserted and the center span replaced—all without disturbing traffic.

Recognizing the advantages of Prepakt, Seaway authorities specified its use for increasing the thickness of eleven piers an average of 1½ feet on all surfaces. Selected coarse aggregate was placed in the forms and consolidated with Intrusion grout to form high-strength Prepakt concrete encasements. The extremely low shrinkage of Prepakt concrete provided a solid monolithic structure with a tight bond to reinforcement and old concrete.

Advantages in time saved and ease of placement have made Intrusion-Prepakt methods and materials particularly well suited to all types of bridge reconstruction and rehabilitation projects. For further information and descriptive engineering report, contact Intrusion-Prepakt, Inc., Room 568-J, Union Commerce Building, Cleveland 14, Ohio. In Canada: Intrusion-Prepakt, Ltd., 159 Bay Street, Toronto, Canada.

INTRUSION-PREPAKT, INC.

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Intrusion and Prepakt are trade marks of Intrusion-Prepakt Inc., whose methods and materials are covered by U. S. Patents Nos 2313110, 2655004, 2434302 and others; also patents pending.

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It's only 46" wide, yet offers a full 30" printing width! This remarkable low-priced table top machine brings "inside" reproduction within the means of the smallest department or firm, makes an ideal "extra" machine for large companies. Handles every type of reproduction job that bigger, costlier machines do. Operates on 115 volt A.C.

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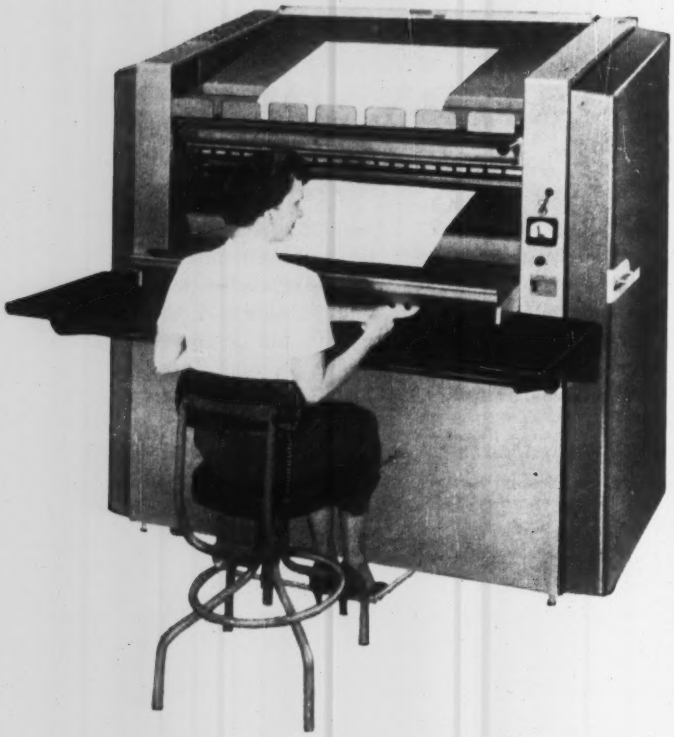
You'll turn out more work with less operator time and effort with this new, ultra-fast machine. It offers top mechanical speed of 40 f.p.m., 46" printing width, automatic separation, front or rear delivery, automatic stacking, and a host of other advanced features. Its 4,000-watt quartz lamp and synchronized exposure and developer units assure uniformly sharp, clear prints.

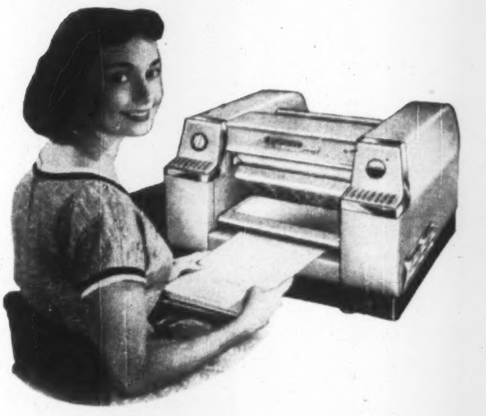


Act Now To Save Time and Manpower, Meet Growing Production Boom Demands!

Now is the time to take a good look at your older reproduction equipment. If it's more than a few years old, chances are it's costing you unnecessary time and money. It may well turn out to be a bottleneck in your efforts to meet growing production boom demands.

Compare your equipment with the new, modern Bruning machines shown here. You should be getting the time and manpower savings offered by greater mechanical speeds, faster return of originals, automatic separation, front or rear delivery! You should be benefiting by problem-free installation and operation—no exhaust venting, no plumbing or auxiliary equipment, no installation other than an electrical connection.

If you're not getting these important advantages, then every day you delay getting new, modern Copyflex is costing you time and money. Act now by mailing the coupon below. You'll be glad you did!



NOW! The Speedy, Versatile Helper Your Big Machine Needs . . . New Model 110!

When you need prints of such smaller size originals as specification sheets, check prints, and engineering changes, this handy table top machine turns them out in a jiffy without tying up your big machine. It saves you time, money, and inconvenience. It has a printing width of 11". Makes 8½ x 11 prints for less than 1¢ each for materials. Operates on 115 volt A.C.

Replace Old Equipment with Reproduction Machines!

Now! A Space-Saving, Versatile Big-Volume Machine . . . New Model 250!

It takes less than a square yard of floor space, yet offers a printing width of 18½" and a fast mechanical speed of 25 f.p.m. Automatic separation and stacking, one-knob control, and an extra-large feed board simplify and speed operator's work. Operates on 220 volt A.C.

NOW! A Budget-Priced, Heavy-Volume Machine . . . New Model 35!

This low-cost machine gives you all the advantages of big volume savings and speed. It provides a full 46" printing width and up to 30 f.p.m. mechanical speed. One knob controls exposure and development, assures consistently top quality prints. Handles roll stock up to 42" wide quickly and efficiently. Operates on 220 volt A.C.

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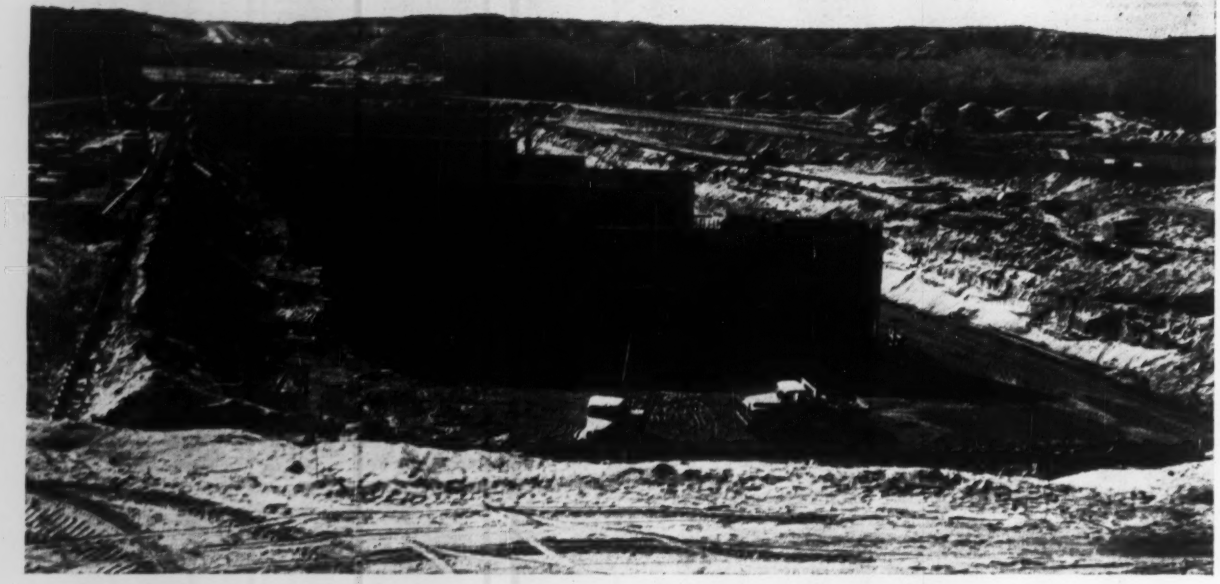

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thanks to

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"Build seven bridge piers, base them 18½ feet below a wet, sandy riverbed, at an elevation of 3500 feet... and do it in a hurry!" Such was the order confronting contractor Gordon H. Ball during construction of a new section of U. S. Highway 66 near Victorville, California, for the State of California.

Aware of the difficulties involved with a project of this type, general superintendent W. W. Haapala and job superintendent Joe Farrell immediately called on the John W. Stang Corporation.

Acting promptly upon the STANG recommendation, a system of STANG wellpoints was engineered and installed. At an elevation of 3500 feet, the single-stage STANG system achieved a drawdown of 18½ feet and completely dewatered the area to be excavated. *This speedy dewatering, done at a much lower cost than by other methods, allowed project completion ahead of schedule and at a profit!*

The STANG organization is ready and able, day or night, to render your water handling problems in the same time-and-money-saving way. Give them a call!

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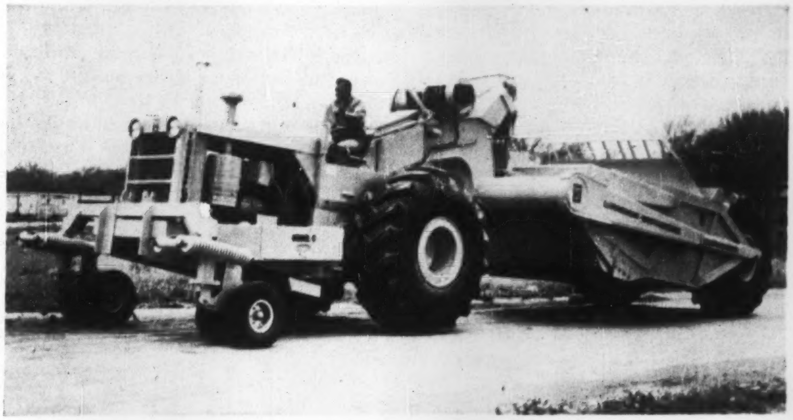


Dolly Converts Tournapull for Road Travel

A wheeled dolly can be attached under the nose of the Model C Tournapull to bring the unit within legal axle limits for highway travel.

The manufacturer claims the unusual feature of the unit is the convertibility that makes it a dual purpose tool. On arrival at the job, for example, instead of removing the dolly and laying it aside to stand idle until the next move, the dolly can be transformed into a 2 ton mobile utility-crane. Hitched behind a panel or pick-up truck, it can handle a wide variety of hoist and carry assignments.

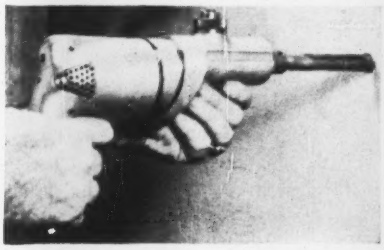
The unit features a three-point hookup that makes it possible to attach to the prime mover in a matter of minutes. All connections are made without special tools.

With the dolly positioned on the ground in front of the Tournapull, the operator lowers the scraper bowl to just above ground level, and noses his machine over the dolly's frame. When the bumper plate at the front of the tractor unit butts against the vertical channels of the dolly frame, positioning is complete. When the scraper bowl is raised to maximum height, the nose of the machine is forced down against the dolly, this pressure lifting the rear of the dolly frame up against the belly-pan of the tractor. Four bolts are fastened and the rig is attached.

When roading is completed, conversion of the dolly to its role as mobile "stiff leg" crane is quick and easy.

After its removal from the prime mover, two bolts are inserted in each of the dolly casters locking them to hold the wheels in parallel tracking position. Then vertical support, boom and jib assemblies are bolted to the dolly frame and the conversion is complete.

The price of the dolly-crane complete is $1,730 f.o.b., Blair, Nebraska. The dolly alone without crane components—vertical support, boom and jib—but with provision for their addition later if desired, is available for $1,660 f.o.b., Blair. Reisser Corp., P. O. Box 362, Blair, Neb.



Double Action Drill Gives Impact and Rotary Motion

A selective action ¼ in. electric drill combines both pneumatic type impact action for carbide masonry drilling plus regular rotary motion. The drill is said to have drilled a ½ in. hole three inches into concrete in less than 30 seconds.

A selector control on top of the drill permits impact action by means of two double cams and a 30 lb preloading spring.

As the shaft rotates, a spring-return impact on each shaft revolution develops a power that has been measured at 90,000 impact lbs minimum, according to the manufacturer.

The Uni-Drill, as the device is called, weighs 5¾ lb. Adaptors are furnished for carbide masonry drills from $\frac{3}{16}$ to 1 in. diameters. Power Tools Corp., 1421 Lakeside Ave., Cleveland 14, Ohio.

Self-Propelled Machine Offers Speedy Compaction

A self-propelled, multi-wheel pneumatic compactor has been designed for finish grade bituminous paving and soil-cement compaction.

Nine rolling wheels with 7:50 x 15 smooth tires are pair-mounted with four wheels in front and the rear wheels extending beyond the body in order to permit operation close to obstacles.

Maximum compactive effort is 2,000 lb per wheel with water ballast and optional six-ply 7:50 x 15 tires inflated to 34 pounds. The body has an 85 cu ft ballast capacity. Rolling width is 66 inches, ground clearance is 15 inches, and body height is 52 inches.

Features are power steering, double-disc brakes and an elevated operator's seat.

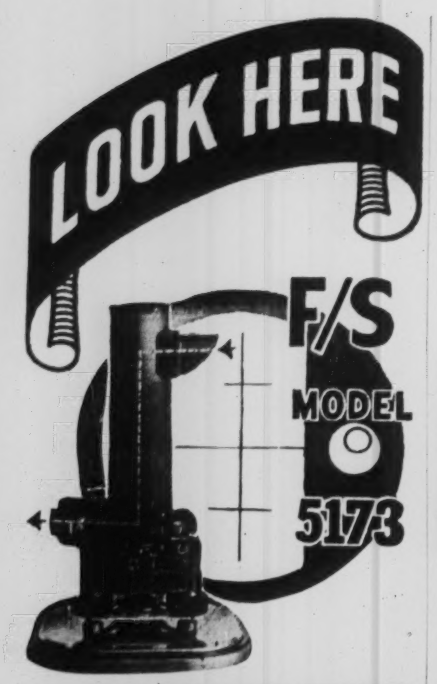
Driven by a gasoline engine rated at 38 BHP at 2000 rpm, the transmission provides six forward and two reverse speeds. Forward speeds are: first gear 1.8 mph; second gear 2.7 mph; third gear 3.2 mph; fourth gear 4.6 mph; fifth gear 5.5 mph; and sixth gear 9.5 mph.

Optional equipment available includes: diesel engine, torque converter with automatic reversing transmission, additional water ballast tanks, front and rear wheel mats, front and real sealed-beam lights and pump tanks, and spray system for soil cement. Chester Products Co., N. Fifth St. and Ford Blvd., Hamilton, Ohio.

Quick-Mounting Spreader Converts Dump Truck

A quick-mounting sand spreader is said to convert an ordinary dump truck into a road spreader within 15 minutes. This quick installation would permit converting a fleet of trucks rapidly to meet sudden winter storms, for distribution of sand, salt, calcium chloride or chips.

The spreader is firmly anchored to



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Now you can get a reliable precision instrument, WORKING 3 TIMES FASTER THAN A CONVENTIONAL LEVEL —and . . . no complicated adjustments . . . no variations caused by changes in temperature!

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the truck box by tie rods with built-on hand cranks. Adjustable shafts lock on the tail gate latches. Installation then is accompanied by simply lifting a spreader from its storage dolly onto the truck body, lining up the shafts at the tailgate and running down the hand cranks.

The manufacturer claims that (1) only one man is needed to operate the spreader over the road, since feed and throttle controls are within reach of the driver in his cab; (2) a more uniform spreading action is based on the positive flow of material to the spinner, by using an auger feed in place of an apron chain or drag bar. Fox River Tractor Co., Appleton, Wis.

Small Scraper Incorporates Scarifier

A new utility scraper has a scarifier-ripper built in as part of the machine.

According to the manufacturer, the scarifier can be lowered on the back haul to rip the soil for the loading runs and also serves as a counterweight for better traction and stability.

Designed for earthmoving on jobs too small to justify larger equipment, it has a capacity of 4.5 yd struck, and 6 yd heaped. The machine also has uses on larger construction jobs for cleanup work and highway shoulder and widening work.

The scraper is powered by an International 650 diesel tractor modified as an 88 hp, two-wheel prime mover. Five speeds range from 2.4 to 21 mph, maximum cutting depth is 4 in. and spread is from 2 to 14 in. Seaman-Gunnison Corp., 230 N. Michigan Ave., Chicago, Ill.

A-C Produces Medium Range Scraper

Allis-Chalmers has expanded its self-propelled scraper line with the introduction of the hydraulically controlled TS-160.

The scraper has a rated capacity of 7 cu yd struck and 9.5 cu yd heaped. The tractor is powered by a 6 cyl, 155 hp diesel providing five forward speeds ranging from 3.1 to 25.4 mph. Allis-Chalmers Mfg. Co., Tractor Group, Milwaukee 1, Wis.

(*New Products continued on page 78*)

Divers flame-cut steel H-piles in 34 ft of water for Housatonic River Bridge piers.

Steel Cofferdam Construction Used for River Bents of New Housatonic River Bridge

Substructure for the Connecticut Turnpike's Housatonic River Bridge, connecting Stratford and Milford, Conn., consisted generally of 24 land bents and nine river bents, plus abutments.

Steel cofferdam construction was used for all nine river bents. Typical was Pier IE, shown here. Excavations were carried down about 40 ft below mean sea level, and two sets of steel frames were used to support the cofferdams. The frames were brought to the job site by barge.

General pile cut-off was about 34 ft below sea level with the piles extending some six feet into the 13-ft thick tremie. Maximum length of the steel piles ran to a spliced 96 ft.

Bethlehem supplied 2083 tons of steel H-piles and 451 tons of sheet piling for the Housatonic bridge substructure. Consulting engineers for the Connecticut State Highway Department were Parsons, Brinkerhoff, Hall and MacDonald of New York. Substructure contractor was Savin Corporation of East Hartford, Conn.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

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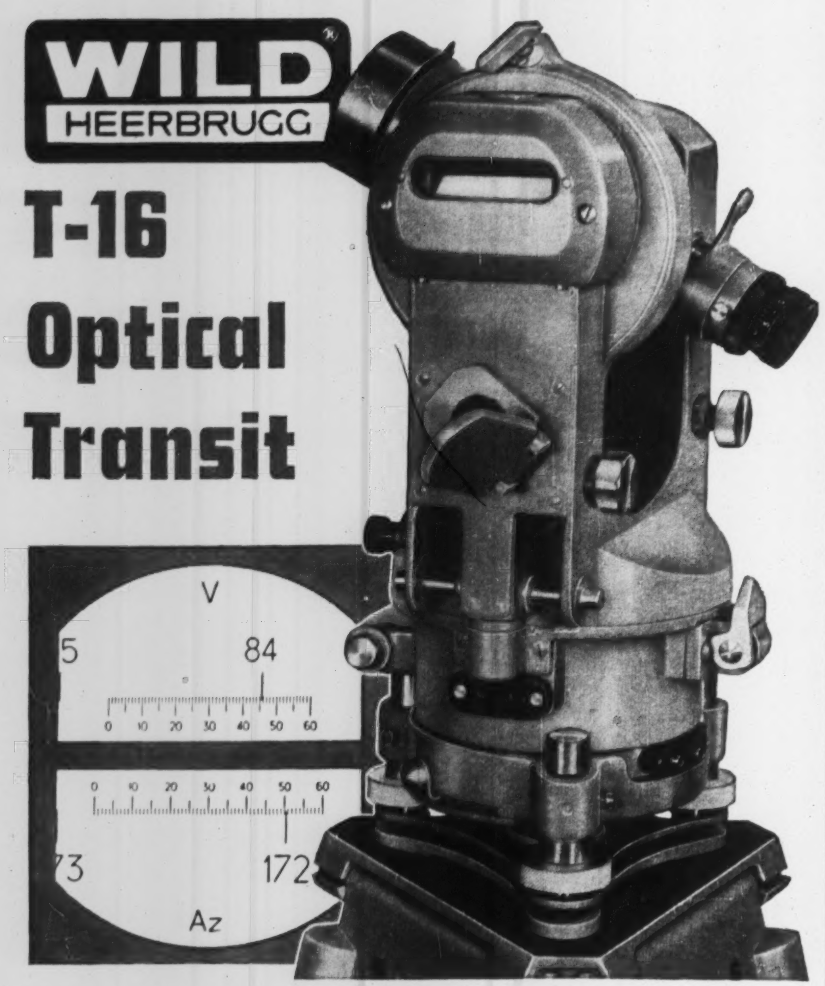

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The T-16 embodies many brilliant new concepts. They add up to a degree of optical and mechanical precision, as well as versatility, that you'll find *impossible to duplicate with any other instrument at this price.*

NOTABLE FEATURES OF THE WILD T-16

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- Azimuth and vertical scales seen simultaneously and read directly.
- Built-in repeating clamp for setting on zero. Eliminates lower plate motions.
- New optical plumb with upright image to speed setting up.
- Optional accessories include battery box providing illumination for scales, level vials and telescope reticle.
- Excellent for mining, highway and land surveying.

PRICE: $700 F.O.B. Port Washington, N. Y. Tripods extra. Write for Booklet T-16

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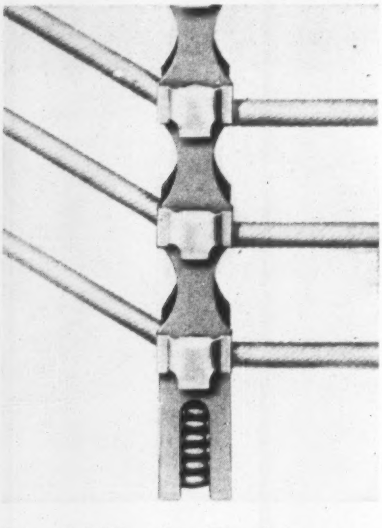


Special Device Positions Seven Prestress Cables

Wires and cables in prestressed beams and girders are restrained and held to the proper curve by a device known as the "Hold-Down."

The Hold-Down can anchor from one to seven cables. Only the top strand is held by a bolt secured with a nut. All other strands are kept in place by a clip slipped over the rivet head. The rivets and bolt roll as the cables move down under stressing.

The manufacturer claims that even when many closely spaced strands are to be fixed they are easily placed in the anchoring device since the cables are slipped in from the side.

The unit is held in position by a ¾ in. high tensile coil bolt. Safe load on a 7 strand Hold-Down is about 14,700 lb. Safe load for individual strands is about 2,100 lb. SUPERIOR CONCRETE ACCESSORIES, INC., 9301 KING ST., FRANKLIN PARK, ILL.

Fast, Permanent Joint For Plastic Conduit Pipe

Carlon Products Corp. now offers "D" conduit, plastic pipe that is joined by brushing solvent cement on the outside ends of the pipe and inside the couplings and pushing the 10 ft lengths together.

The joint is made in minutes, according to the manufacturer, and results in a permanent weld, with positive root and moisture protection.

The conduit, which has a rubber and styrene base, can be cut with a handsaw and, according to the manufacturer, one man can install 100 ft in 40 minutes. CARLON PRODUCTS CORP., 10225 MEECH AVE., CLEVELAND, OHIO.

Every minute counts...

when
you're
paying
the
bills

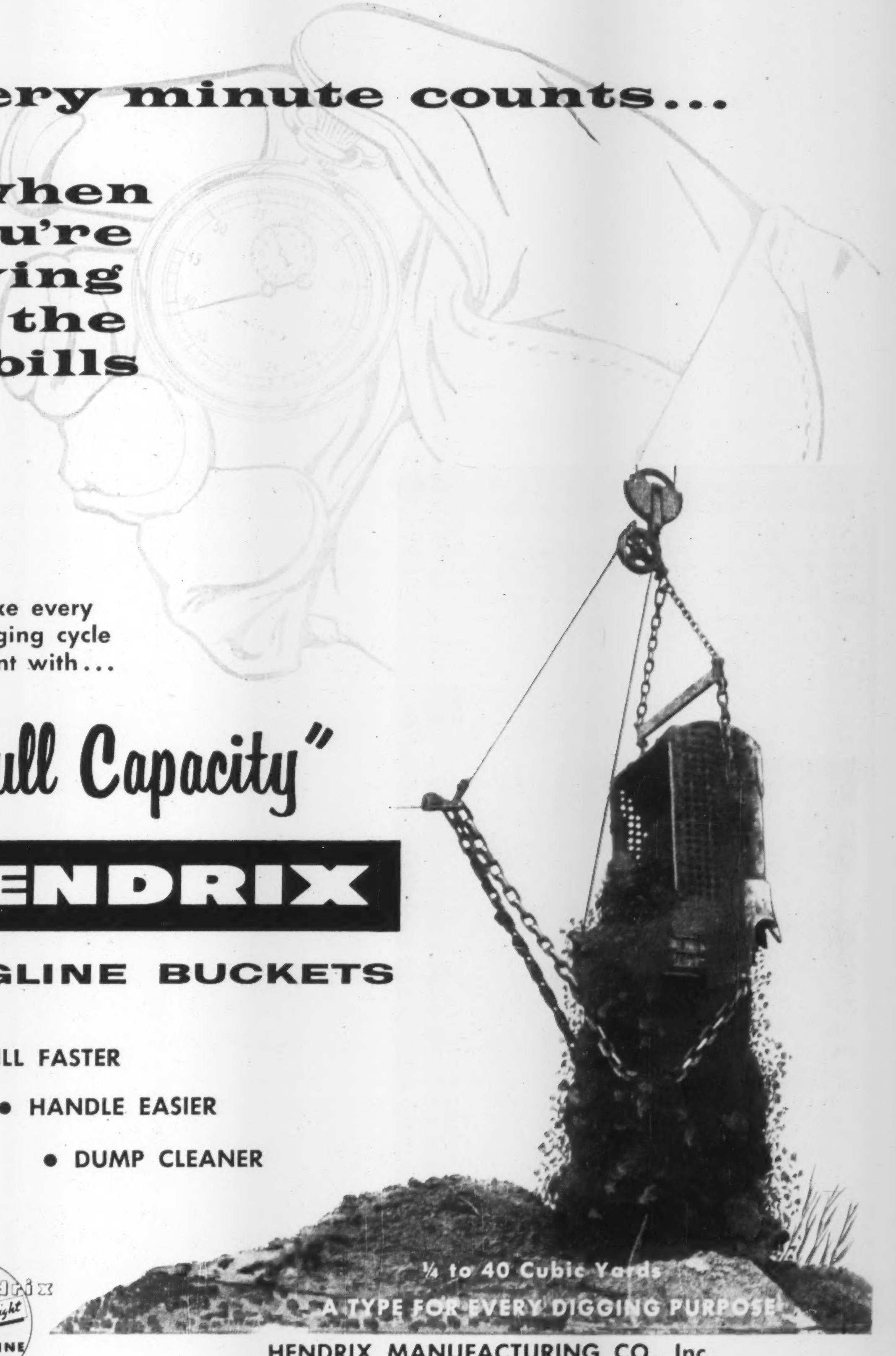
make every
digging cycle
count with...

"Full Capacity"

HENDRIX

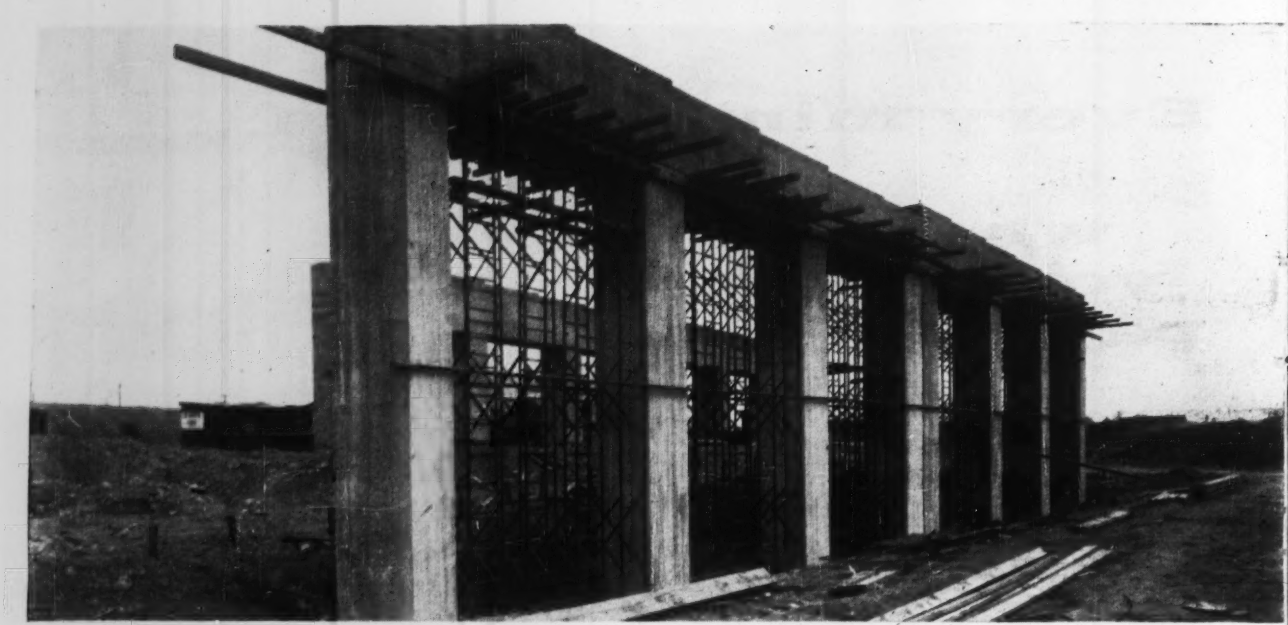
DRAGLINE BUCKETS

- FILL FASTER
- HANDLE EASIER
- DUMP CLEANER


¼ to 40 Cubic Yards
A TYPE FOR EVERY DIGGING PURPOSE

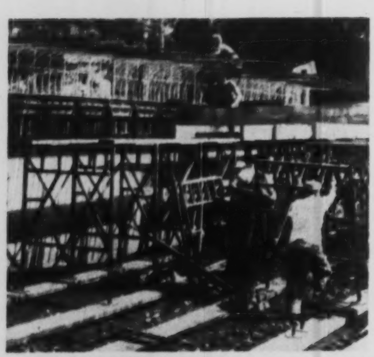
Hendrix Lightweight Dragline Buckets

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA



NEAT, QUICK SUPPORT—C. J. Meany Co., contractor, gets quick support for beams on bridge piers with minimum equipment at substantially lower forming costs. He uses "Trouble Saver" Steel Shoring for an overpass bridge on the new Northeast Expressway, Revere, Mass. 24 6'6"-high ladder frames spaced 3'7" apart, are rapidly erected to provide neat, ample shoring for each 3'6" wide, 4' deep, 13' long concrete beam section. The 2'-wide ladder frames give workers immediate access to the top for fast forming work. By using versatile, prefabricated steel shoring, instead of wood, forming costs are cut at least 25%.

Familiar Scaffolding



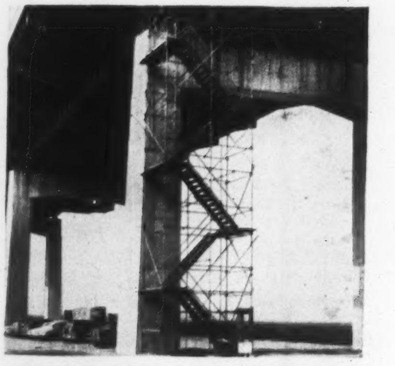
PREFAB SHORING — Only 60 welded steel "Trouble Saver" Shoring frames are required to support forms for 30'-wide bridge in New Jersey. They are spaced 3'7" apart, with 3'8" between rows, to support slab varying from 1'5" to 2'3".

ONCE USED mainly for buildings, steel scaffolding is now a time and money saver for structures required in highway work.

The most important use is "Trouble Saver"® Sectional Steel Shoring to support forms for concrete overpasses and bridge piers. This modern Shoring Method reduces over-all forming costs substantially . . . and here's how—

"Trouble Saver" Shoring is rapidly erected from simple parts—frames, U-heads and patented SlideLoks for joining frames and braces. Since it has a known load-bearing factor, the spacing between frames and rows of frames can be accurately calculated to provide shoring with proper capacity for load requirements. Double-diagonal bracing "automatically" plumbs the free-standing sections. 20" extension legs are adjustable to reach exact heights and eliminate cutting, fitting and wedging with wood. Form stripping is fast—simply lower legs and work atop planking laid across frames. Minimum nailing speeds dismantling, adds life to forming lumber.

Other PS Co. scaffolding also helps gain time and cut costs on highway jobs. For more information, send coupon below.



SAVES WALK-AROUND — 41'-high "TubeLox"® Scaffolding access tower with built-in stairways quickly gets men to daily job-sites; saves long walks from bridge ends. New Jersey Turnpike bridge; Bethlehem Steel Co., builders.

SEND NOW—For Highway Bulletin G208

Full details on cost-cutting ways to use steel shoring and scaffolding on road jobs.

The Patent Scaffolding Co., Inc.
38-21 12th Street, Dept. ENR, Long Island City 1, N. Y.

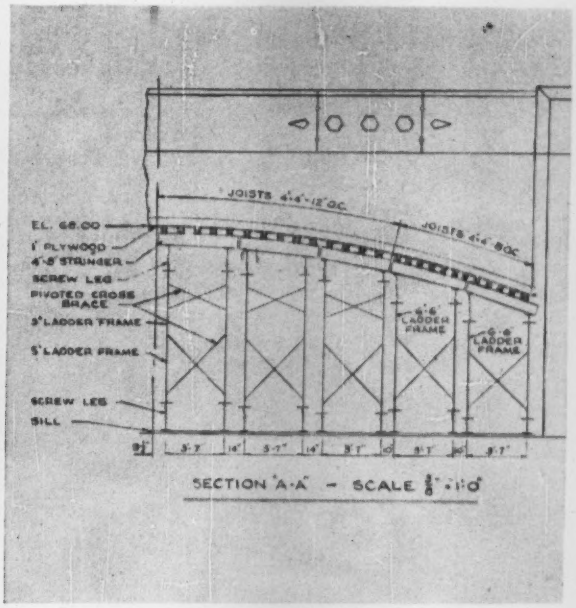
Name____

Company______________________________________

Address______________________________________

City________________________Zone____State__________

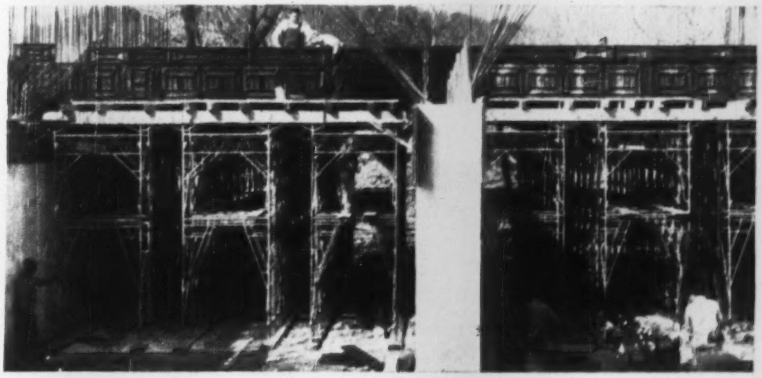
SIMPLE BRIDGE SHORING — Light-weight, easily-erected, prefab sections of "Trouble Saver" Steel Shoring eliminate heavy timbers (and cranes to handle them) for contractor, Matthew J. Reiser, Inc., on this job. 146 2'-wide ladder frames, 105 5'-wide frames and 196 14" U-heads provide ample support with minimum equipment for overpass on an exit road from the Wilbur Cross Parkway, Wethersfield, Conn.


JOISTS 4"-4"-12" OC.
JOISTS 4"-4" 8" OC
EL. 68.00
1" PLYWOOD
4"-8" STRINGER
SCREW LEG
PIVOTED CROSS BRACE
3' LADDER FRAME
5' LADDER FRAME
6'-6" LADDER FRAME
6'-6" LADDER FRAME
SCREW LEG
SILL
SECTION "A-A" - SCALE 3/8" = 1'-0"

PS Co. ENGINEERED LAYOUTS—Complete, accurate shoring layouts are a regular part of PS Co's engineering service available thru nation-wide offices or representatives that *sell* or *rent* "Gold Medal"® Scaffolds. See classified 'phone directory for your local source. Included are recommendations for joists, stringers, and every component to provide the safest, most efficient and economical shoring.

Does Many Highway Jobs

DUAL PURPOSE—Here, "Trouble Saver" Scaffolding speeds erection of formwork for above-ground pier shells and supports platform for vibrating machines and workers on a New York State Thruway overpass.



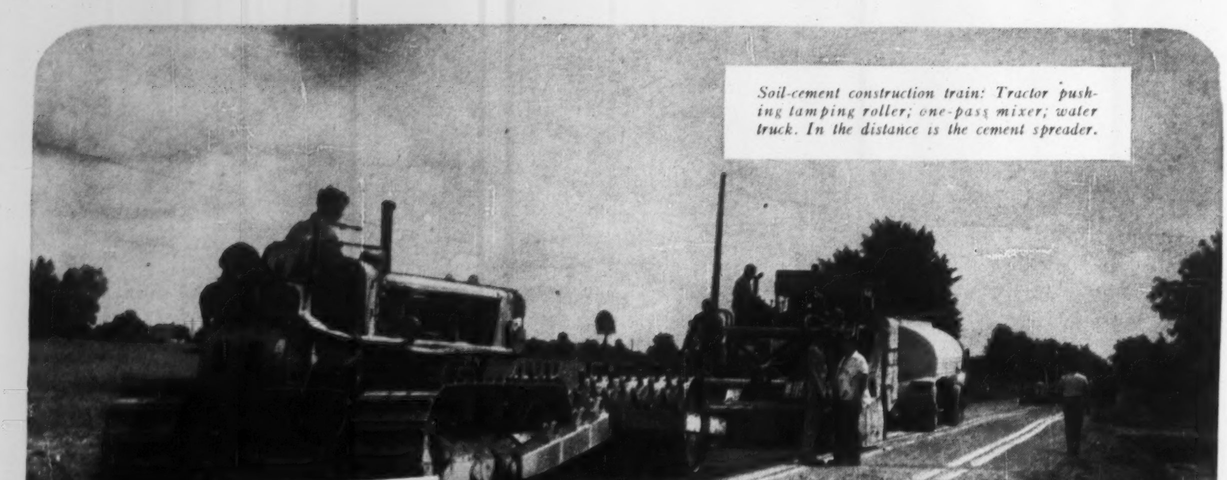
CUTS SHORING COSTS 25%—Mal-Bros Co., contractor on this street relocation bridge in Scotch Plains, N. J., formerly used only wood shoring methods. On this project "Trouble Saver" Steel Shoring was used. 272 frames, quickly assembled in 3' by 5' towers and in rows spaced 2'6" apart, provide faster, easier shoring for the job. The contractor reports savings of 25%.

FOR GREATER SAFETY . . . EFFICIENCY . . . ECONOMY

GOLD MEDAL LADDERS SCAFFOLDING®

THE PATENT SCAFFOLDING CO., INC.

38-21 12th Street, Dept. ENR, Long Island City 1, N. Y.
West Coast: 6931 Stanford Ave., Los Angeles 1, Calif. • In Canada: 355 Dufferin St., Toronto
Branches in all Principal Cities



Soil-cement construction train: Tractor pushing tamping roller; one-pass mixer; water truck. In the distance is the cement spreader.

Genesee County, Mich. proves value of all-weather *SOIL-CEMENT* roads

The tremendous population and traffic growth in Genesee County, Mich., severely taxed the capacity of the gravel-surfaced county road system. Rapid conversion to the most serviceable, economical type of all-weather road was essential.

The Road Commission of Genesee County investigated the problem and decided to try soil-cement. Two 1-mile test sections of soil-cement road* were built in 1951. These wintered well and five miles were built in 1952. In 1954, 4.9 miles were added. And in 1955 an additional 5.4 miles were built.

By 1956 the Road Commission decided that soil-cement all-weather roads had definitely proved themselves and felt justified in adopting a much larger program for that year. Accordingly 33 miles, involving 405,000 sq. yd., were built.

These soil-cement roads have met with wide public approval and a growing demand for increased construction. As a result, at least 60 miles are planned for the 1957 construction season.

1 *Compacting with tamping roller*

2 *Blading compacted soil-cement mix*

3 *Finishing with pneumatic rollers*

4 *The completed, all-weather road*

As in Genesee County, officials everywhere are specifying soil-cement for modernizing old roads. Soil-cement is also being used extensively for paving shoulders and building new roads.

For more information on this fast and economical method of paving write for free literature. It is distributed only in U.S. and Canada.

*Consists of soil-cement base and bituminous surface.

PORTLAND CEMENT ASSOCIATION
Dept. A8d-17, 33 West Grand Avenue, Chicago 10, Illinois
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

Unit Prices

Twin Cities Airport Enlarged While Operating

Bury & Carlson, Inc., of Minneapolis, has the $62,856 contract to build a 75 ft x 2,500 ft flexible type runway at Crystal Airport together with connecting taxiways and grading for additional building. Close coordination with flight schedules will be required to maintain full operation for seven commercial operators and five flight schools. Work is for Minneapolis-St. Paul Metropolitan Airports Commission. Toltz, King, Duvall, Anderson & Associates, Inc., St. Paul, is the consultant; Royce B. Hansen, the engineer in charge.

Wages in this area range from $2.40 for common labor to $2.78-$3.07 for tractor operators.

The six bidders included:

1C	Bury & Carlson, Inc., Minneapolis, Minn	$62,856
2	Craig J. Alexander, Minneapolis	64,417
6	Barton Contracting Co., Osseo, Wis	73,889
EE	Toltz, King, Duvall, Anderson & Assoc, Inc., St. Paul	86,126

Bids: 6-3-57 Items	Unit	Quantity	Unit Prices 1 C	 2
Excavation, common	cy	45,000	$0.35	$0.26
Water	Mgal	230	5.00	3.50
Cr agg base course 4"	sy	14,500	0.31	0.45
5"	sy	18,000	0.36	0.56
Asphaltic concrete	t	2,325	6.40	7.00
Asphalt cement	t	151	34.00	35.50
Prime coat bit matl	gal	14,800	0.18	0.16
RCP culv, furn & inst 12"	lf	176	4.00	2.88
30"	lf	114	9.84	8.14
RCP fl end sections f & i 12"	ea	4	19.20	16.80
30"	ea	2	63.60	50.40
Fibre duct bank, 2-hole	lf	204	3.85	7.00
4-hole	lf	295	5.50	7.50
markers	ea	14	22.00	10.00
Fence, cl A f & i	lf	2,848	0.93	0.63
Gates walkway, 4 ft f & i	ea	2	27.50	31.50
road, 14 ft f & i	ea	2	100.00	57.75
Fence, cl D f & i	lf	690	0.55	0.54
remov & reset	lf	2,090	0.33	0.75
Seeds	lb	700	0.80	0.78
Fertilizing	ac	33	55.00	22.05
Seeding	ac	10	75.00	26.25
Cover crop	ac	23	20.00	20.47

Completion schedule: 7-1-57 to 10-15-57
Liquidated damages: Extra engineering costs for supervision beyond completion date.

Indiana Bridge to be Built In Six Spans at $228,564

This new bridge, 359 ft long, will replace an existing narrow structure over Grant Creek in Switzerland County. Indiana State Highway Department awarded the job in tight bidding to Smith & Johnson, Inc., Indianapolis, on a low bid 2½% under the estimate.

One reinforced concrete girder section has two spans of 45 ft each, the other is a single 45 ft span. The continuous steel beam section has three spans, 70-84-70 ft. A clear roadway of 28 ft and 2 safety walks of 2 ft each account for the width. Steel H bearing piles, 53-lb, are used in end bents and piers 2 and 6. Class F concrete requires 7 bags of cement per cu yd and class E requires 5.

Minimum wage rates range from $1.25 per hour for common labor through $1.35 for semi-skilled to $1.50 for skilled workers.

Bidders were:

1C	Smith & Johnson Inc, Indianapolis, Ind	$228,564
2	Mitchell & Stark Const. Co., Medora, Ind	228,804
EE	State Highway Dept. of Indiana	234,474

Bids: 7-9-57 Items	Unit	Quantity	Unit Prices 1C	 2
Conc, cl F, 7 bags/cy	cy	677.6	$85.00	$80.00
cl E, above ftgs. 5 bags	cy	337.0	60.00	70.00
cl E, in ftgs, 5 bags	cy	146.6	50.00	60.00
railing	lf	767.5	14.00	12.00
Steel, reinforcing	lb	169,158	0.14	0.14
structural	lb	316,200	0.215	0.215
Cast iron	lb	1,398	0.50	0.70
Furn equip, pile driving	ls	1	300.00	500.00
Excavation, wet	cy	625	22.00	18.00
Special borrow	cy	1,060	1.00	1.00
grade B	cy	50	2.00	3.00
Sodding	sy	200	1.00	0.60
Remov exist struct	ls	1	500.00	1,500
R/W markers	ea	9	9.00	10.00
Steel H piles, furn 53#	lf	2,352	6.00	6.00
drive	lf	2,352	2.00	3.00
Anchor rods, MK-AR	ea	32	6.00	4.00
Steel, struct, exp jnt	lb	7,400	0.45	0.45
Excavation, cl X	cy	40	40.00	20.00
Bridge barrier	ea	1	100.00	50.00
Riprap, hand-placed	sy	35	8.00	6.00

Completion Schedule: 8-19-57 to 7-1-58

State Rebuilds Underpass To Clear Maine Central RR

To reconstruct Mill Street underpass at Brunswick, Maine, to a horizontal clearance of 72 ft and vertical clearance of 14′ 6″ the State Highway Department, Augusta, awarded a $37,487 contract to Ken Cianchette, Inc., Pittsfield, Maine. The job is one mile from the railhead.

The owner furnishes structural steel and wrought iron plate.

Specifications call for 3,000 lb concrete. Cement is priced separately.

Rock excavation for the abutments accounts for 31.9% of the total cost, concrete for the abutments, 22.4%, erection of structural steel and wrought iron plate, 28.0%, and the intermediate trestle support, 3.2%.

Minimum wage rates are $1.05 for unskilled labor, $1.20 for intermediate labor and $1.50 for skilled labor.

The five bidders include:.

1C	Ken Cianchette, Inc., Pittsfield, Me	$37,487
2	Reed & Reed, Woolwich, Me	40,410
5	J. E. McEachern, Greenville Jct., Me	48,418

Bids: 4-17-57 Items	Unit	Quantity	Unit Prices 1C	 2
Exc struct, abuts, earth	cy	160	$4.00	$4.00
rock	cy	540	22.00	15.00
Borrow, granular	cy	150	1.25	3.00
Gravel base course	cy	150	1.50	3.00
Bit conc base	t	65	14.00	20.00
Overhaul, place meas	ym	300	0.10	0.10
pit meas	ym	300	0.08	0.08
Bit conc surf, type A	t	80	14.00	20.00
Conc PC, abuts	cy	174	48.00	38.00
Portland cement	bbl	230	6.00	6.00
Steel, struct, erect	lb	142,000	0.065	0.08
reinf, deliver	lb	5,600	0.12	0.14
reinf, place	lb	5,600	0.03	0.05
WI plate, erect	lb	30,700	0.04	0.10
Intermediate trestle support	ls	job	1,200	4,000
Loam borrow	cy	10	3.00	5.00
Sodding	sy	70	3.00	4.00

Work to start: at option of railroad
Time to complete: 70 working days
Liquidated damages: $30.00 per day

HOW TO HANDLE
WET JOBS

IS THIS A RECORD FOR DEWATERING SILTY SAND & CLAY?

Concrete box culvert, Old Bridge, N. J.
Contractor: Almeida Construction Co.

PHOTO, JUNE 1—Griffin equipment shipped that day. Difficult swampy soil required use of specially designed sand filters around the wellpoints.

JUNE 4. Wellpoint system installed over weekend and excavation well under way. Actually, the 5 ft of water was under control just 20 *minutes* after pumping started.

That's how skillfully the filters were designed. P. S. Almeida called Griffin on the recommendation of a contractor friend. Ask *your* friends about Griffin.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last July 25; Next Aug. 29.
- Wage Rates, Building Board, Lath, Insulation: Last Aug. 1; Next Aug. 29.
- Cement Aggregates, Ready-mixed Concrete, Asphalt: Last, Aug. 8; Next Sept. 5.
- Iron & Steel Products, Pine: Last Aug. 15; Next Sept. 12.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

LONG LEAF Y. P. Merchantable grade up to 20 ft.

PLYWOOD Rail freight increment (See note for base price)

		Southern Pine and Douglas Fir									Long Leaf Y. P.		Plywood	
		1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	2x12 Rgh	12x12 Rgh	5/8"	3/4"
Atlanta	†	**$83.00**	**$88.00**	**$77.50**	**$76.00**	**$87.00**	**$95.00**	**$150.00**	......	......	**$110.00**	......	$22.32	$27.24
Baltimore	*	**92.00**	**96.00**	**96.00**	**98.00**	**98.00**	**102.00**	**114.00**	......	......	**170.00**	**$185.00**	25.92	31.60
		97.50g	*105.00g*	*123.00g*	*123.00g*	*123.00g*	*123.00g*	*133.00g*	*$144.00*	*$144.00*	......		......	......
Birmingham	†	**87.00**	**89.00**	**82.00**	**89.00**	**92.00**	**97.00**	**112.00**	......	......	**115.00**	**160.00**	21.78	26.58
		108.50	*108.50*	*105.00*	*108.00*	*108.00*	*113.00*	*111.50*	*108.50*	*108.50*	......	......	......	......
Boston	3	**99.00f**	**99.00f**	**107.00f**	**107.00f**	**107.00f**	**115.00a**	......	......	......	......	......	25.92	31.60
		97.00k	*97.00k*	*114.00*	*114.00*	*114.00*	*119.00*	*122.00*	*127.00*	*128.00*	......	......	......	......
Chicago	**	**94.00**	**97.00**	**91.00**	**105.00**	**113.00**	**114.00**	**109.00**	......	......	**137.00**	**137.00**	22.45	27.37
		105.00	*105.00*	*118.00*	*116.00*	*116.00*	*117.00*	*125.00*	*125.00*	*125.00*	......		......	......
Cincinnati	*	**96.00**	**97.25**	**87.00**	**93.25**	**98.00**	**106.00**	**119.50**	......	......	**143.75**	**141.75**	25.00	30.48
		100.25	*101.50*	*106.00*	*108.00*	*109.00*	*112.50*	*134.00*	*134.00*	*134.00*	......	......	......	......
Cleveland	**	**92.00**	**93.00**	**99.00**	**95.00**	**95.00**	**95.00**	......	......	......	......	......	25.37	30.93
		......	......	*116.00*	*106.00*	*106.00*	*106.00*	*136.00*	*136.00*	*136.00*			......	......
Dallas	k‡	**70.00**	**70.00**	**65.00**	**65.00**	**65.00**	**70.00**	**140.00**	......	......	**136.00**	**130.00**	18.72	22.80
Denver	*	*Not in stock*		*121.50*	*121.50*	*121.50*	*126.00*	*140.50*	*147.50*	*152.80*	......	......	13.92	16.98
Detroit	‡	**116.50**	**119.50**	**114.00**	**117.00**	**122.00**	**122.00**	......	......	......	**130.00**	......	25.00	30.48
		125.00	*125.00*	*130.00*	*132.50*	*130.00*	*135.00*	*185.00*	*195.00*	*195.00*	......	......	......	......
Kansas City	3	**120.00**	**120.00**	**120.00**	**120.00**	**125.00**	**135.00**	......	......	......	......	......	16.56	20.16
		120.00	*120.00*	*120.00*	*120.00*	*125.00*	*130.00*	*150.00*	*225.00*	*225.00*	......	......	......	......
Los Angeles	1	*95.00*	*95.00*	*95.00*	*95.00*	*95.00*	*95.00*	*119.00*	*130.00*	*130.00*	......	......	16.61ab	20.25ab
Minneapolis	#	*135.00*	*135.00*	*140.00*	*140.00*	*140.00*	*140.00*	*185.00*	*185.00*	*185.00*			19.89	24.25
Montreal	ab	**94.00**	**103.00**	**94.00**	**95.00**	**113.00**	**130.00**	......	......	......	**125.00**	**125.00**	......	......
		180.00	*180.00*	*180.00*	*180.00*	*180.00*	*180.00*	*171.00*	*171.00*	*171.00*	......	......	......	......
New Orleans	†	**87.00**	**87.00**	**94.00**	**91.00**	**90.00**	**97.00**	**121.50**	......	......	**151.00**	**151.00**	18.72	22.80
	†	*110.00*	*110.00*	*104.50*	*120.00*	*120.00*	*120.00*	*132.50*	*132.50*	*152.50*	......	......	......	......
New York	3	**108.00**	**109.00**	**116.00**	**117.00**	**117.00**	**122.00**		......	......	**240.00**	**255.00**	25.92	31.60
		......		*117.00*	*120.00*	*121.00*	*122.00*	*165.00*	*165.00*	*165.00*	......	......	......	......
Philadelphia	‡		**Range from $117.00 to $137.00**				**117/137**	**117/137**	......	......	**214/224**	**214/224**	25.92	31.60
			Range from $131.00 to $163.00				*131/163*	*136/158*	*165.00*	*165.00*	......	......	......	......
Pittsburgh	2	**130.00**	**130.00**	**125.00**	**125.00**	**130.00**	**135.00**	......			**150.00**	......	25.92	31.60
		140.00	*140.00*	*145.00*	*140.00*	*145.00*	*145.00*	*180.00*	*200.00*	*210.00*	......	......	......	......
St. Louis	#	**118.00**	**120.00**	**128.00d**	**128.00d**	**128.00e**	**133.00e**	......		......	......	......	18.72	22.80
		......	......	*137.00*	*137.00e*	*137.00e*	*141.00e*	*195.00e*	*195.00*	*195.00*	......	......	......	......
San Francisco	A	*75.00*	*75.00*	*82.00*	*82.00*	*82.00*	*82.00*	*117.00*	*125.00*	*132.00*	......	......	12.22	14.91a
Seattle	†	*67.00*	*73.00*	*73.00*	*73.00*	*73.00*	*74.00*	*85.00*	*90.00*	*90.00*	......	......	......	......
Toronto	a	**91.00**	**95.00**	**90.00**	**91.00**	**91.00**	**91.00**	......	......	......	**93.00**	......	......	......
		114.00	*114.00*	*120.00*	*122.00*	*126.00*	*130.00*	*145.00*	*140.00*	*150.00*	......	......	......	......

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd., truckload lots, 5/6 Mftbm

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. *a Spruce. *b Tax exempt. *c 5M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *f Hemlock *g No. 1 common. *j 8 ft. lengths. *k No. 3 common. A incl rail rate from Northwest mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures.

PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4′ by 8′ panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price, Interior 5/8″, $146.00; 3/4″, $166.00. Exterior 5/8″, $150.00; 3/4″, $170.00. For other centers add rail freight increment from table on proper size. *a Lower rate by water shipment. *b 50,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	 B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	78%c	78%e	$0.2615
Baltimore	74%d	76%d	.2615
Birmingham	82%	83%	.2065
Boston	72-10%	72-10%	.2615
Chicago	72%	72%	.2615
Cincinnati	74%	74%	.2615
Cleveland	74-2-10%	74-2-10%	.3015
Dallas	76%	76%	.2690
Denver	73%	73%	.2665
Detroit	74-10-10%	74-10-01%	.2615
Kansas City	76-10-10%	76-10-10%	.2665
Los Angeles	70%	76%e	.2640
Minneapolis	71-10%	71-10%	.2665
Montreal	40-10-5%bc	40-10-5%b	22.05h
New Orleans	75%	76%	.2665
New York	70-10%	79-10%	.45j
Philadelphia	74-10%	76-10%	.2615
Pittsburgh	72%	72%	.2615
St. Louis	72 10-10%	72-10-10%	.2665
San Francisco	60%	72%	.2615
Seattle	67%	70%	.2640

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: *a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. *c 77% for single strength *d Discount 6/15/52. *e 77% for double strength

Explosives: * Cartridges of 1¼″, 1½″, 1¾″, 2″, 2¼″, 2½″, 3″ diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h F.o.b Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.80

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.2065	$0.2465	$0.2615
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.2115	.2515	.2615
Rocky Mtn. States	.2115	.2515	.2665
Pacific N. W. States	.2090	.2490	.2640
Pacific S. W. States	.2065	.2465	.2615

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

			By Rail	
Dimensions	**Points**	**Length**	**Pine***	**Fir**
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.50/68	....
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.78/.88	.93
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.83/93	.94
14-in.—2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in.—2-ft. from butt	5-in.	90 to 100-ft.	....	1.03

* Pine piling over 80-ft. available only in limited quantities

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6″ x 8″ x 8′		7″ x 8″ x 8′6″	
		Untr.	Tr.	Untr.	Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	.....	4.00a	.....	4.60a
New York	S. L. Sap Pine	2.00d	4.00d	3.00g	6.00g
	Mixed Oak	2.50d	4.50d	3.50g	6.50g
Philadelphia	Red Oak	2.95/3.15	4.50/4.70	3.60/3.80	5.50/5.75
St. Louis	White Oak	2.65	.....	2.95	.....
	Red Oak	2.55	3.25a	2.80	3.60a
San Francisco	Douglas Fir	2.03ef	2.96ef	2.84bef	4.31caf

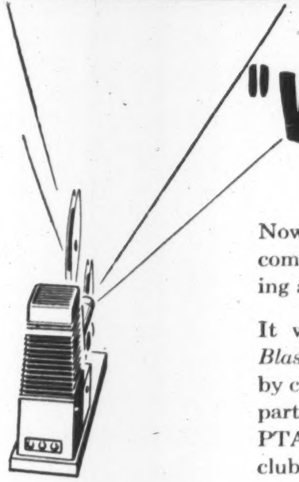
Tr.—Treated; Untr.—Untreated. a Creosoted. b 7″ x 9″ x 8′. c Empty cell d 6 x 8 x 8′6″ e Green. f f.o.b. cars. g 7 x 9 x 8′6″ * Add 75¢/tie freight charge to Birmingham.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.103
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	29.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	14.90

DANGER
EXPLOS



"We're blasting near you"

Now you can gain better public relations in communities where you are blasting by showing an interesting, informative film, in color!

It works, too. The film, entitled, "*We're Blasting Near You*" has already been shown by contractors and quarry operators in many parts of the country, to audiences including PTA groups, civic organizations and service clubs.

The movie tells why blasting is necessary, and explains the steps you are taking to "be a good neighbor." It shows how millisecond delay techniques eliminate the old-fashioned, jarring explosions of the past, and how modern blasting methods keep noise, vibration and flying rock to a minimum.

This unique film is accompanied by a kit of suggested news releases, sample speeches, safety posters and other helpful material—everything you need to conduct a successful meeting in your community. Plan now to get the important public relations benefits from showing "*We're Blasting Near You.*" Write, telling us the approximate dates you'd like to schedule it.

Technical Customer
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WILMINGTON 99, DELAWARE
offices in principal cities

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, S. N. NOLAN, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—LB & CA

† **Carlino Eng. & Contg. Co. Inc.**, 577 Pond St., Braintree, Mass, CA **$650,000**. Mass. 58-C-Fed. 4-A8 ELEMENTARY SCHOOL, Otis Air Force Base, FALMOUTH, MASS. U. S. Eng., Housing & Home Finance Agency, 346 Broadway, New York, N. Y. Bids July 30. CD 8/7, under LB.

CONNECTICUT—State Hy. Comn., State Office Bldg., Hartford,

D. V. Frione & Co. Inc., 87 Foxon St., New Haven, Conn., CA **$621,364**. Projs. 08-64 and 167-42, approx. 10,450 lin. ft. hot b. conc. two sections Route 69, F 9-S-96 (2) and S 96 (3). Bethany and Woodbridge. Bids July 15, awarded Aug. 2. CD 7/22, under LB.

▲ **White Oak Excavators, Inc.**, 61 E. Main St., Plainville, Conn., LB **$1,687,636** (6 bidders) grading west approach to Glastonbury-Wethersfield Bridge across Connecticut River at Wethersfield, HARTFORD, CONN. Greater Hartford Bridge Auth., 71 Capitol Ave., Hartford, Conn. Bids Aug. 9.

BUILDINGS—LB & CA

Stewart & Williams, Inc., 108 Arsenal St., Augusta, Me., LB **$655,400**, est. $650,000, KITCHEN BLDG., addn., State Hospital, AUGUSTA, ME., State Dpt., Institutional Service, State House, Augusta, Me. Bids Aug. 7. CD 7/25.

Gilbane Bldg. Co., Inc., 90 Calverley St., Providence, R. I., LB **$809,557**, est. $800,000, INSURANCE BLDG., Cummings Ave. and Boutin Sts., CONCORD, N. H. Farm Bureau Mutual Insurance Co., 28 S. Main St., Concord, N. H. Bids Aug. 2, CD 7/17.

Singleton Constr. Co., 390 Pleasant St., Tewksbury, Mass., CA **$695,200**, TOWN OFFICE BLDG., Hampshire St., METHUEN, MASS. Town, Municipal Bldg. Comn., Town Hall, Methuen, Mass. Bids July 15, CD 7/22, under LB.

J. W. Bishop Co., 109 Foster St., Worcester, Mass., CA **$800,000**, est. $800,000, SCIENCE BLDG., Woodland St., WORCESTER, MASS., Clark University, 950 Main St., Worcester, Mass. Bids July 11. CD 7/3.

The Deering Co., 209 Main St., Norwalk, Conn., CA **$300,000**. 1½ story LAUNDRY, NORWALK, CONN. Norwalk Hospital, 24 Stevens St., Norwalk, Conn.

Bregman Constr. Corp., 250 E. 43 St., New York, N. Y., LB **$837,820** (9 bidders) East Side Elementary SCHOOL, Durham Rd., WALLINGFORD, CONN. Town, Town Hall, Wallingford, Conn. Bids July 29. CD 6/12.

Bregman Constr. Corp., 250 E. 43 St., New York, N. Y., LB **$841,111** (8 bidders) West Side Elementary SCHOOL, Highland Ave., WALLINGFORD, CONN. Town Hall, Wallingford, Conn. Bids July 29. CD 6/12.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

New Jersey—BA On Or About 8/29—U. S. Eng., 111 E. 16 St., New York 3, N. Y., dredging 8 ft. below mean low water involving removal of approximately 77,200 cu. yd., place measurement, all material except ledge rock from Sandy Hook Bay at Leonardo, Monmouth Co., ENG-30-075-58-11.

† **New York**—BA 9/3—Power Authority of the State of New York, Coliseum Tower, 10 Columbia Circle, New York, Zone 19, Contr. T7, Spec. PA 8-20, 115-kv transmission lines for Reynolds Power Supply Plans deposit $10, and $5 for each addnl. set. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/5/54.

† **N. Y., Niagara Falls**—SHELTERS—BA On Or About 9/11—U. S. Eng., 111 E. 16 St., New York, Zone 3, ready fighter A/C shelters, Niagara Falls Air Force Base, ENG 30-075-58-14, $150,000-$175,000. CD 11/1.

BUILDINGS—BA

N. Y., Binghamton—MOTEL-HOTEL—BA 8/26—Sheraton Corp. of America 470 Atlantic Ave., Boston, Mass., hotel-motel $350,000. extended date. Samuel Glaser Assoc., 234 Clarendon St., Boston, Mass., archts. F. Goldberg, LeMessurier & Assoc., 667 Boylston St., Boston, Mass., structural engr., CD 7/15.

Md., Prince Frederick—SCHOOL—BA 8/29—Calvert County Bl. Educ., Prince Frederick, elementary school, near here, Plans deposit $50. Johannes & Murray, 955 Pershing Dr., Silver Spring, arcrts. CD 5/7.

HEAVY CONSTRUCTION—LB & CA

Great Lakes Dredge & Dock Co., 17 Battery Pl., New York, N. Y., CA **$1,035,223**, Contr. BP-150.009, dredging Pier No. 1, Brooklyn-Port Authority Piers, BROOKLYN, N. Y. The Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids June 18. CD 5/21.

BUILDINGS—LB & CA

Vicbar Constr. Corp., 17 Neptune Ave., Brooklyn, N. Y., Owner Builds, **$686,000**, 49 HOUSES, E. 105 St., Ave. N and E. 104 St., BROOKLYN, N. Y. Morris Rothstein & Sons, 186 Joralemon St., Brooklyn 2, N. Y., archts.

▲ **R. S. Noonan, Inc.**, 26 N. Duke St., York, Pa., LB **$1,333,947**, 244-bed DORMITORY; LB **$347,268**. SOPER COMMON addn., alterations, CLINTON, N. Y. Bd. Trustees Hamilton College, Clinton, N. Y. CD 1/16.

▲ **McManus Longe & Brockwehl**, Box 5067, Albany, N. Y. LB **$1,518,800**. general contract 2 ELEMENTARY SCHOOLS, COLONIE, N. Y. Colonie Central School Dist. No. 1, Colonie, N. Y. Sargent, Webster, Crenshaw & Folley, 2112 Erie Blvd. E., Syracuse, N. Y., archt.

▲ **Consolidated Constructors**, 21 E. 40 St., New York, N. Y., LB **$1,169,713** Oneida HIGH SCHOOL and site development, ONEIDA, N. Y. Bd. Educ., Oneida Consolidated School Dist., Oneida, N. Y. King & King, 344 S. Warren St., Syracuse, N. Y., archts. CD 7/6/56.

H. R. Glovis Inc., 520 Oak St., Auburn, N. Y., LB **$537,800**, ELEMENTARY SCHOOL, OWASCO, N. Y. City, City Hall, Owasco, N. Y. Beardsley & Beardsley, 64 South St., Auburn, N. Y., archts. Bids July 17.

Frank W. O'Connell, 329 Water St., Binghamton, N. Y., LB **$790,800**. general contract HIGH SCHOOL, OWEGO, N. Y. Central School Dist. No. 1, Owego, N. Y. Fudge & Underhill, 105 W. Church St., Elmira, N. Y., archts.

▲ **Habecht Constr. Co.**, 34 Grey St., Buffalo, N. Y., LB **$1,056,242**, (a) elementary school addn (b) alterations and (c) bus garage, RETSOF, N. Y. York Central School Dist., Retsof, N. Y. Jas. W. Kedeney & Assocs., 220 Delaware Ave., Buffalo, N. Y., archts.

L. A. Swyer, 255 Lark St., Albany, N. Y., LB **$913,900**. DORMITORY and DINING HALL, SARATOGA, N. Y. Skidmore College, Saratoga, N. Y. CD 4/16.

▲ **I. & O. A. Slutzky**, Hunter, N. Y., LB **$1,435,700**. general contract JUNIOR and SENIOR HIGH SCHOOL, SAUGERTIES, N. Y. Bd. Educ., Central School Dist. No. 1, Saugerties, N. Y. Sargent, Webster, Crenshaw & Folley, 2112 Erie Blvd. E., Syracuse, N. Y., archts.

▲ **C. F. Braun & Co.**, 45 Rockefeller Plaza, New York, N. Y., CA Est. **$9,000,000**. design and construct ASPHALT REFINERY adjoining existing structure on Arthur Kill, LINDEN, N. J. Cities Service Co., 70 Pine St., New York, N. Y. C. F. Braun & Co., 45 Rockefeller Plaza, New York, N. Y., engrs.

▲† **Malan Constr. Corp. & Dean Constr. Corp.**, 2 Park Ave., New York, N. Y., Item No. 1, LB **$5,140,000**; Item No. 2, LB **$5,120,000**; Item No. 3, LB **$5,100,000**; Item No. 4, LB **$5,040,000**; Item No. 5, LB **$5,010,000**, est. $8,000,000 BLOWER BLDG. exten., etc., Naval Air Turbine Test Station, NBy-11554, TRENTON, N. J. Pub. Wks. Office, Dpt. Navy, Phila. Naval Base, Phila., Pa. Bids June 18. CD 5/6.

▲ **Housing Engineering Corp. & Fairmount Steel Co.**, 1229 Mount Royal Ave., Baltimore 17, Md., CA **$1,216,000**. Capehart HOUSING, New Cumberland General Depot, ENG-18-020-57-3, NEW CUMBERLAND, PA. U. S. Eng., 24 St. and Maryland Ave., Baltimore 18, Md. Awarded Aug. 8. CD 2/13, under LB.

▲ **Diller Plank, Inc.**, Box 203, Willow Street, Pa., LB **$1,254,763** general contract (5 bidders) secondary SCHOOL for Eastern Joint School Dist., YORK, PA. State P. School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Buchart Associates, 611 Market St., York, Pa., archts.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., 1221 E. Broad St., Richmond,

English Constr. Co., Inc., Box 191, Altavista, Va., CA **$1,227,882**, 5 bridges and c. conc. paving 2.37 mi. beginning 0.03 mi. South Int. Rte. 460 and ending Int. existing Rte. 29, SP 4615-06-07-08-12-75-79-80-82, Fed. Proj. U-UG-118-1(2), F-FG-018-1(1), Lynchburg and Campbell Counties. Bids July 26. CD 8/1 under LB.

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., 1221 E. Broad St., Richmond,

Va.—**W. E. Graham & Sons**, Box 268, Cleveland, N. C., CA **$1,302,578**, c. conc. 2-lanes, 0.41 mi. and bridge beginning Int. Broad Street and ending 0.61 mi. north Int. Broad Street, SP 1643-70-72, Fed. Proj. U-UG-127(1), City of Richmond;

Va.—**Atlantic Bitulithic Co., Inc.**, 1400 Roseneath Rd., Richmond, Va., CA **$667,030**, b. conc. 1.93 mi. beginning at WCL Richmond and ending west WCL Richmond, SP 1743-11-13, Fed. Proj. F0017-2(1), Henrico Co.;

Va.—**Ames & Webb, Inc.**, Box 4055, Norfolk, Va., CA **$558,390**, rein.-con. and c. conc. wid'n 1.15 mi. beginning Int. Rte. 337-Int. Rte. 17 (Geo. Washington Hy.) and ending SCL Portsmouth, SP 1863-1864-71; 2064-70, Fed. Proj. U-119(1) U-124-1(1), City of Portsmouth. Grand total $2,527,998. Bids July 26. CD 8/1, under LB.

NORTH CAROLINA—State Hy. Comn., Raleigh,

Jesse M. Cobie, Box 664, Greensboro, N. C., CA **$829,249**, sub-grade c. conc. pav't., wid'n. 9.22 mi. existing U. S. 64 and 70 from point 2 mi. northeast of Hildebran, northeast to point approx. 1 mi. southwest of Conover, Work Order No. 8.16249, Catawba Co. Bids July 30. CD 8/6, under LB.

BUILDINGS—LB & CA

Thompson & Street, 2622 Piedmont Rd. N.E., Atlanta, Ga., LB **$1,358,000**. STATE CAPITOL alterations, renovations, ATLANTA, GA. Secy. of State, State Capitol, Atlanta, Ga. Bids Aug. 1. CD 7/16.

Liles, McKelvy & Rutland Constr. Co., 2828 W. Edgemont St., Montgomery, Ala., CA **$855,953**, 98-unit low rent HOUSING for Negroes in Knoxville suburb, TALLADEGA, ALA. Talladega Housing Authority, 151 Curry Court, Talladega, Ala. Bids Aug. 6. CD 7/26.

Charles Carter & Co. Inc., Box 1270, Baton Rouge, La., LB **$803,000**, (6 bidders), CLASSROOM bldg., gym, home economics cottage alterations and repairs, ZACHARY, LA., Parish School Bd., Baton Rouge, La. Miller, Smith Assoc., 125 N. Boulevard, Baton Rouge, engrs.

Clarke Stewart & Wood, 328 Georgetown Rd., Lexington, Ky., LB **$612,966** Base Bid, RESIDENCE HALL for women, Transylvania University, LEXINGTON, KY. Transylvania College, 200 E. 3 St., Lexington, Ky. Bids Aug. 2. CD 7/23;

Eubank & Steel, 611 E. 3 St., Lexington, Ky. LB **$616,966** on alternate bid for residence hall (Lexington, Ky.).

W. F. Holt & Sons, Inc., 119 Laurel St., Nashville, Tenn., CA **$694,000**, OPERATIONS and TRAINING BLDG., Berry Air Field, NASHVILLE, TENN. Tennessee National Guard, State Capitol, Nashville, Tenn. Bids June 20. CD 6/28, under LB.

(Continued on page 88)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

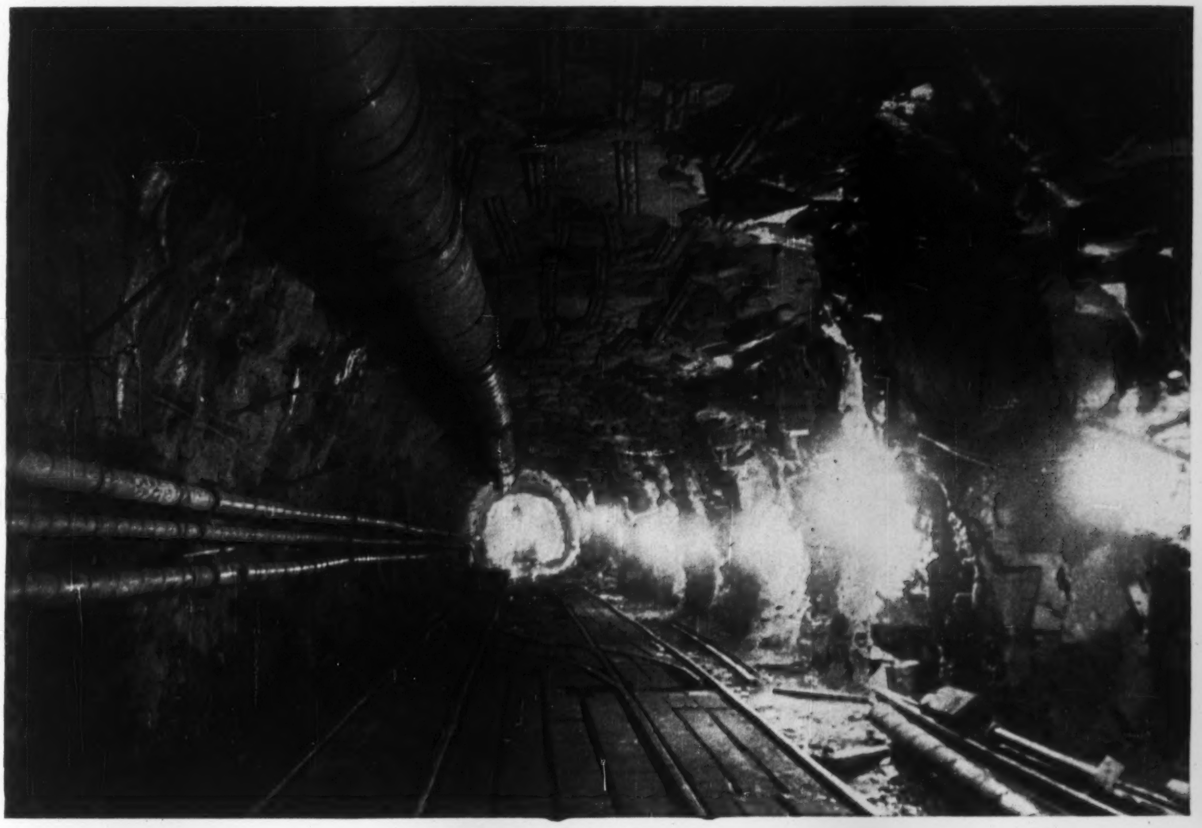
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

UNDERGROUND AIR-LIFT



How **NAYLOR** *Pipe Supplies the Vital Ingredient in Tunnel Construction*

Whether you need air for breathing or for operating pneumatic tools in underground construction, there's no better way to supply it than through Naylor Spiralweld pipe.

Because Naylor pipe is light in weight, it's faster and easier to install in tunnel work — especially when joined with the one-piece Naylor Wedgelock coupling.

The exclusive spiral-lock structure provides the extra collapse strength needed for push-pull ventilation. Lines hug the wall and can be made up with only one side of the pipe in the open. They can be extended quickly as work progresses.

Naylor pipe is available in sizes from 4 to 30 inches in diameter and thicknesses from 14 to 8 gauge.

For full details, write for Bulletins No. 507 and No. 514.

NAYLOR

NAYLOR PIPE COMPANY
1248 East 92nd Street, Chicago 19, Illinois

Eastern U.S. and Foreign Sales Office:
60 East 42nd Street, New York 17, N. Y.

(Continued from page 86)

MIDDLE WEST

BUILDINGS—BA

▲ O., **Lebanon**—ADMINISTRATION, etc.—BA 9/4—State Div. Corrections, State Office Bldg., S. Front St., Columbus, administration bldg., reception block, chapel, school and facilities for vocational training and food service, Mediaum Security Institution for 1,500 inmates, $11,600,000. CD 4/18.

BUILDINGS—SLC

▲ Ill., **Joliet**—PLANT—Amoco Chemicals Corp., 1 Park Ave., New York, N. Y., soon lets contract chemical plant. $10,000,000. Scientific Design, 2 Park Ave., New York, N. Y., engrs. CD 4/22.

HEAVY CONSTRUCTION—LB & CA

▲ **W. L. Sheppard & Co.**, 1412 Altgeld St., Chicago, Ill., LB **$2,259,767**, grading, c. conc. paving N.W. Rte. Superhighway from W. Van Buren to W. Madison St., CHICAGO, ILL. City, City Hall, Chicago, Ill. CD 7/15.

WISCONSIN — State Hy. Comn., State Office Bldg., Madison,

Wis.—**Schuette Bldrs. & Schuette Pavers, Inc.**, P. O. Box 321, Manitowoc, Wis., CA **$666,716**, c. conc. 6.434 mi. The Green Bay Dykesville Rd., S. T. Hy. 54 & 57, Proj. F 03-3 (9), Contr. 1, Brown Co., CD 7/19;

Wis.—**Frank Mashuda Companies Assoc.**, 5556 West Roosevelt Dr., Milwaukee 10, Wis., CA **$348,011**, grade, sub-base, structures 3.876 mi. The Allenton Interchange-West Co. line Road, U. S. Hy. 41, Proj. F 03-1(48), Contr. 1, Washington Co., CD 8/12 under LB. Bids Aug. 6.

Tomasini Contr. 9012 W. Hampton Ave., Wauwatosa, Wis., CA **$51,771** (2 bidders), water mains in N. Lovers Lane Rd., WAUWATOSA, WIS. City, City Hall, Wauwatosa, Wis. Bids Aug. 1. CD 4/20/55.

BUILDINGS—LB & CA

▲ **Hunkin-Conkey Constr. Co.**, 1740 E. 12 St., Cleveland 14, O., LB **$3,000,000** (2 bidders) LUTHERAN HOSPITAL addn., CLEVELAND, O. Lutheran Hospital, 2609 Franklin Ave., Cleveland 13, O. CD 3/24/54.

Dunlop & Johnston, 19220 Miles Ave., Cleveland, O., CA Est. **$750,000** (4 bidders), 1 story, brick, concrete WAREHOUSE, INDEPENDENCE, O. Westcreek Corp., 7555 Bessemer Ave., Cleveland 27, O., Bing Furniture Co., lessee. Awarded July 15. CD 6/11.

▲ **Roediger Constr. Co.**, 1729 Superior Ave., Cleveland 14, O., LB **$1,346,000** (7 bidders) STUDENT ACTIVITIES bldg. No. 1, UNIVERSITY HEIGHTS, O. John Carroll University, University Heights, O. Bids July 31. CD 7/10.

Fruin-Colnon Constr. Co., 1595 E. Epler, Indianapolis, Ind., CA **$707,900** (17 bidders), DORMITORY WING on Student Union Bldg. at Indiana Univesity Medical Center, to house 200 students, INDIANAPOLIS, IND. Indiana University, Bd. Trustees, Bloomington, Ind. Bids July 23. CD 10/20/50.

▲ **Sollitt Constr. Co.**, 301 S. Columbia St., South Bend, Ind., CA **$1,846,617**, 1 story, 300,000 sq. ft. FACTORY BLDG. addn., MISHAWAKA, IND. Bendix Aviation Corp., 400 S. Beigre St., Mishawaka, Ind. A. M. Strauss, 600 Strauss Bldg., Fort Wayne, Ind., archt. Bids July 30. CD 8/6.

Graver Constr. Co., Inc., Theodore St., Joliet, Ill., CA **$650,000**, 62,000 sq. ft. PLANT, 20 acre site, CHICAGO HEIGHTS, ILL. United Wallpaper Co., Steen Resin & Chemical Co. Div., 1350 So. Kostner Ave., Chicago, Ill. Laramore, Douglass & Popham, Inc., 332 So. Michigan Ave., Chicago, engr.

▲ **C. A. Tharnstrom & Co.**, 7401 St. Louis St., Skokie, Ill., CA **$7,000,000**, 400 unit APARTMENT, 6301 N. Sheridan Rd., and breakwater, CHICAGO, ILL. Leo A. Solomon & Arthur H. Hollub, c/o Irving M. Karlin, archt., 203 N. Wabash Ave., Chicago, Ill. CD 1/22.

▲ **Ralph M. Parsons Co.**, 617 S. Olive St., Los Angeles, Calif., CA Est. **$3,000,000**. 7,500 b/d FLUID CAT CRACKER at refinery, ALMA, MICH. Leonard Refineries, Thomas and E. Superior Sts., Alma, Mich.

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ Tex., **Longview**—BANK, etc.—BA 8/29—Longview National Bank, Longview, bank-office. $1,250,000.

Tex., **Houston**—PLANT—BA 9/3—Magnet Cove Barium Corp., 3133 Buffalo Speedway, Houston, plant expansion $650,000. Geo. F. & Abel B. Pierce, 2200 Welch St., Houston, Tex., archts. CD 2/11/56.

▲ Tex., **Mount Pleasant**—REFINERY—BA 11/1—American Petroleum Co. of Texas (subsidiary of American Petrofina Inc.), c/o Mercantile Securities Bldg., Dallas, expansion of existing refinery adding a catalytic reformer, alkylation unit and related facilities. $3,400,000. CD 8/7.

HEAVY CONSTRUCTION—LB & CA

▲ **MISSOURI**—State Hy. Comn., **Jefferson** City,

Mo.—**Millstone Constr. Co.**, 8510 **Eager Rd.**, St. Louis, Mo., CA **$1,720,960**. c. conc. 0.886 mi., St. Louis Co.;

Mo.—**R. T. Crow & Bernard McMenamy, Jr.**, 1914 Clay St., St. Charles, Mo., CA **$100,178**, grav. or crushed stone surf. 7.394 mi., St. Charles Co. Bids July 25. CD 8/2, under LB.

▲ **MISSOURI**—State Hy. Comn., Jefferson City,

Millstone Constr. Co., 8510 Eager Rd., Brentwood(17), St. Louis, Mo., CA **$277,387**, one 100 ft, one 107 ft. rein.-con. box girder spans; CA **$455,905**, one 198 ft., one 120 ft. rein.-con. box girder spans; CA **$392,335**, one 122 ft., two 74 ft. rein.-con. box girder spans; CA **$239,982**, one 615 ft., one 706 ft., and one 435 ft. rein.-con. box girder spans; CA **$160,620**, rein.-con. retaining walls, all in St. Louis City, Grand total $1,526,229, Bids July 25, CD 8/2, under LB.

Sorkness Constr. Co., Box 148, Fargo, N. D., CA **$506,126** 541.47 mi. telephone lines, Cass, Trail, Steele, Cavafier, Walsh anl Pembina Counties, exchange bldgs. at Bathgate, St. Thomas, Cavalier, Edinburg and Galesburg, NORTH DAKOTA Polar Rural Telephone Mutual Aid Corp., Grafton, N. D. Bids July 16. CD 8/7, under LB.

▲ **Ramsey & Leftwich**, Box 559, Lubbock, Tex., CA **$1,013,300**, Air Terminal, MIDLAND, TEX. City, City Hall, Midland, Tex. Bids June 10. CD 6/20, under LB.

▲ **COLORADO**—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Peter Kiewit Sons' Co., 1950 S. Colorado Blvd., Denver, Colo., CA **$1,122,983**, est. $1,164,000. structures and approaches 0.132 mi. State Hy. 185, Colo. I-002-2 (49) Denver and Castle Rock, Arapahoe and Douglas Counties. Bids Aug. 7. CD 7/24.

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver,

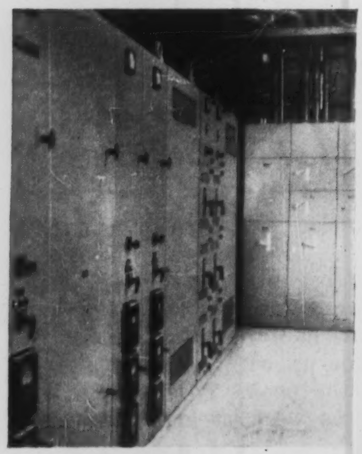
Colo.-Dominic Leone Constr. Co., Trinidad, Colo., CA **$1,064,831**, est. $1,204,000. b. conc. surf. 8.001 mi. I-002-3 (17) Huerfano Co.,

Colo.-Gardner Constr. Co., Glenwood Springs, Colo., CA **$1,466,899**, est. $1,548,000. grading, structures, surf. 0.643 mi. US 0016 (12) Pueblo Co. Bids Aug. 6. CD 7/24.

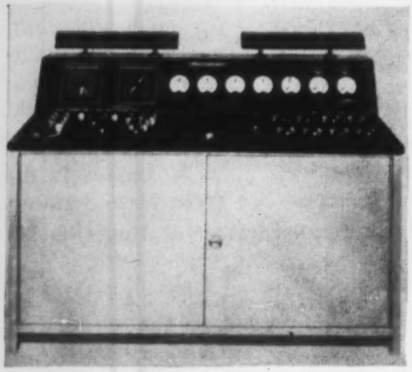
BUILDINGS—LB & CA

Larsen Bros., 10 N. Main St., Council Bluffs, Iowa, LB **$812,921**, general contract Hillcrest Dining Hall at University of Iowa, IOWA CITY, IOWA, State Bd. Regents, Des Moines, Iowa. Tinsley, Higgins, Lighter & Lyon, 526 Liberty Bldg., Des Moines, Iowa, archts. Bids July 27. CD 7/16.

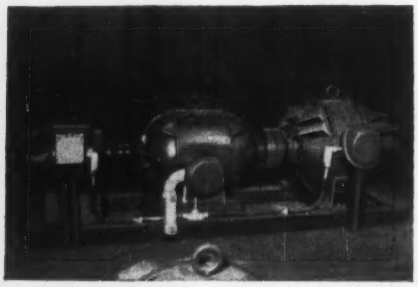
WESTINGHOUSE LIFTS IT



Westinghouse air-cooled power center transforms high voltage utility supply and distributes power for all bridge services. Compact and centralized control center shown at rear assures better motor control and greater savings.



Nerve center of action for the busy span. This Westinghouse control desk centralizes operation and indicates performance of bridge drives.



Westinghouse motor-generator set supplies power for regulated D.C.A.V. drive system.

South Park Avenue lift bridge . . .
Buffalo, N. Y.

▲ **Rinderknecht Constr. Co.,** 113 F. Ave., N. W., Cedar Rapids, Iowa, CA Est. **$2,750,000,** 1 story, 235,000 sq. ft. PLANT to house fabrication activities, metal shop, machine shop, engineering and modeling shop, painting and plating dpts., etc., CEDAR RAPIDS, IOWA, Collins Radio Co., 855 35 St. N. E., Cedar Rapids, Iowa. CD 8/1.

C. Rallo Constr. Co., 5000 Kemper Ave., St. Louis, Mo. LB est. **$500,000.** 2 story and ground floor, 30x140 ft. and 88x44 ft. brick, granite, masonry blocks, spectra glaze blocks, rein. con. MEDICAL CENTER for Union's Health and Welfare Unit, at 4488 Forest Park Blvd., ST. LOUIS, MO., Meat Cutters Union Local No. 88 and Related Industries, 1558 S. Vandeventer Ave., St. Louis 10, Mo. Bids Aug. 1. CD 7/29.

▲ **St. Joseph's Hospital,** c/o Sister Superior, 1400 Main St., Fort Worth, Tex., rejected bids July 15, HOSPITAL ADDN., FORT WORTH, TEX. LB **$3,883,000.** CD 7/17, under LB.

Missouri Valley Constr. Co. & Winston Bros., Box 801 Leavenworth, Kan., CA **$500,000,** POWER PLANT addn. Morgan Creek, near Arlington, FORT WORTH, TEX. Texas Electric Service Co., 109 N.E. 2nd St., Fort Worth, Tex. CD 3/6/53.

▲ **Childs Constr. Co.,** 2716 East Lancaster St., Fort Worth, Tex., LB **$1,011,500;** tile, concrete steel sanctuary, FORT WORTH, TEX. Travis Ave. Baptist Church, c/o Dr. Robert E. Naylor, pastor, 3000 Travis Ave., Fort Worth, Tex. Bids Aug. 8. CD 7/10.

Fretz Constr. Co., Box 18094, Houston, Tex., CA **$698,000;** CHURCH, HOUSTON, TEX. St. Cecilia's Catholic Parish, Bunker Hill Rd. and Devine Dr., Houston, Tex. Bids July 18. CD 7/9.

Fretz Constr. Co., 2000 Eastwood St., Houston, Tex., CA **$522,000;** 2 TELEPHONE EXCHANGE buildings, HOUSTON, TEX. Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, Tex. Bids July 23. CD 7/17.

Wichita Falls Housing Authority, c/o Chester T. Olson, exec. dir., 501 Webster St., Wichita Falls, Tex., rejected bids July 9, HOUSING, WICHITA FALLS, TEX. LB Est. **$676,800.** CD 7/16, under LB.

FAR WEST

BUILDINGS—BA

▲ **Calif., Riverside**—LIFE SCIENCE—BA 9/5—University of California, Riverside, 2 story, L shaped, 226x150 ft. face brick, with architectural concrete trim, Life Science Bldg. $1,667,000. Plans deposit $200. Pereira & Luckman, 9220 Sunset Blvd., Los Angeles, archts. CD 12/7/55.

▲ **Calif., Carmichael**—SCHOOL—BA 9/11—San Juan Union High School Dist., 3738 Walnut Ave., Encina High School, 1400 Bell Ave., **$2,000,000.** CD 5/31.

HEAVY CONSTRUCTION—LB & CA

ARIZONA—State Hy., Dpt., Phoenix, Bids opened Aug.

W. J. Henson, Contractor, P.O. Box 471, Prescott, Ariz., LB **$108,767** (5 bidders) select material, bit. road mix and seal coat 2½ mi. beginning at town of Kirkland and extending north over county road toward Prescott, Item No. 300 AFE 912, S 266 9. Yavapai Co. CD 7/24.

H. Kaeser Co., 3629 34 Ave. S., Seattle, Wash., LB **$159,895** (5 bidders), pumping station and force main on 63 Ave. S.W., SEATTLE, WASH. City, County-City Bldg., Seattle, Wash. R. W. Morse, Seattle, Wash. city engr. Bids July 31. CD 8/16/54.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,

R. E. Hazard Contracting Co. and W. F. Maxwell Co., Cabrillo Freeway at Friars Rd., San Diego, Calif., CA **$1,368,476,** grading, surf. 1.1 mi. U.S. 101 in San Diego between 0.4 mi. south of Washington St. and Barnett Ave. and rein.-conc. box girder bridge, SI S. D-2; S.D., San Diego Co. Bids July 25. CD 7/29, under LB.

BUILDINGS—LB & CA

▲ **Co-ordinated Constr. Co.** 12901 S. Crenshaw Blvd., Hawthorne, Calif., CA **$3,046,500;** 30,000 sq. ft. MANUFACTURING BLDG. and OFFICE BLDG., 310,388 sq. ft. BUENA PARK, CALIF. Kraft Foods Corp., 500 Peshtigo Ct., Chicago, Ill. James M. Fox, 8060 Telegraph Rd., Rivera, Calif., archt.

Davies, Keusder & Brown, 4915 Exposition Blvd., Los Angeles, Calif., CA **$523,470,** general contract, administration bldg., incl. 2 story office bldg., rein.-con. fdns., Los Angeles State College of Applied Arts & Sciences, San Bernardino Freeway Campus, LOS ANGELES, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids July 31, awarded Aug. 6. CD 8/7, under LB.

▲ **MacDonald, Young & Nelson, Inc.,** 351 California St., San Francisco, Calif., CA **$1,296,345** (7 bidders) grading foundation for 28 story OFFICE, OAKLAND, CALIF. Kaiser Center, Inc., Kaiser Bldg., 1924 Broadway, Oakland, Calif. Bids July 16. CD 6/27.

Cahill Constr. Co., 350 Sansome St., San Francisco, Calif., LB **$844,800** (10 bidders) 2 rein.-con. WINGS to existing bldg. Lucie Stern Memorial Hall, (men's dorm) PALO ALTO, CALIF. Stanford University Bd. Trustees, Palo Alto, Calif. Bids Aug. 5, CD 7/24.

▲ **Dickman Constr. Co.,** 1702 Miramonte Ave., Mountain View, Calif., LB **$1,458,000** (9 bidders) HIGH SCHOOL, Bayshore Hy., East Palo Alto, REDWOOD CITY, CALIF. Sequoia Union High School Dist., Broadway and El Camino Real, Redwood City, Calif. Bids Aug. 7, CD 7/16.

▲ **Barrett Constr. Co.,** 1800 Evans Ave., San Francisco, Calif., CA **$3,817,000,** general contract, 7 story, 400,000 sq. ft., rein.-con. STATE OFFICE BLDG., vicinity of Golden Gate and Polk Sts., SAN FRANCISCO, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Grand total **$6,197,815.** Bids Aug. 6, CD 8/8, under LB;

Patterson-Emerson Comstock, Inc., 3247 Grand Ave., Oakland, Calif., CA **$787,878,** electrical work, (San Francisco, Calif.);

Anderson & Row, Inc., 2501 Harrison St., San Francisco, Calif., CA **$1,592,937,** mechanical work, (San Francisco, Calif.).

Douglas W. Edwards, 2014 S. Pacific Ave., Santa Ana, Calif., CA **$640,000,** 33x48 ft. and 37x49 ft., 80 DWELLINGS, Tr 2208, SANTA ANA, CALIF. Bristol Park, P. O. Box 509, Santa Ana, Calif.

K&H Constr. Co., 19644 El Camino Real, Sunnyvale, Calif., Owner Builds. **$715,000,** eleven 2 story, frame stucco APARTMENTS, Monroe St. between El Camino and Wistar St., SANTA CLARA, CALIF.

Crocker Constr. Co., 1296 Market St., Yuba City, Calif., LB **$969,000** (10 bidders) 1 story, rein.-con. 34,000 sq. ft., Fremont HOSPITAL, YUBA CITY, CALIF. Fremont Hospital, Bd. Directors, 815 Plumas St., Yuba City, Calif. Bids Aug. 6, CD 7/18.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Ga., Decatur**—Bd. Comrs. DeKalb Co., Court House, voted bonds May 15, addnl. water mains, and water sys. imprvs. **$500,000.** CD 4/16.

▲ **Tex., Abilene**—City, City Hall, water supply, **$1,500,000.** Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs.

SEWERS, WASTE DISPOSAL

▲ **Ga., Decatur**—Bd. Comrs., DeKalb Co., Court House, voted bonds May 15, sewerage sys., expansion. **$3,500,000.** CD 4/16.

▲ **Kan., Raytown**—City, City Hall, voted bonds May 14, Proposal 1, **$1,095,000** for sewers, Proposal 2, **$1,727,000** sanitary sewerage sys. imprvs., Proposal 3, **$450,000,** sewerage sys. imprvs. B. L. Oliver & Co., 1805 Grand St., Kansas City, Mo., consult. engrs. CD 5/15.

La., Lake Charles—Gravity Drainage Dist. No. 4 Parish of Calcasieu, Robert J. Christ, secy., P. O. Box 610, constr. Kayouche pump station. **$500,000.** D. W. Jessen & Assocs., 18 Kaufman Bldg., consult. engrs. CD 12/28/54.

AND LEVELS IT

The Buffalo, N.Y. South Park Avenue Bridge has plenty of ups and downs, with heavy traffic flow on both roadway and river. The span hoist system includes controls which automatically synchronize fast-acting motor drives in each tower, assuring accurate leveling throughout entire span travel.

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▲ **Mass., Boston**—City, P. Wks. Dpt., City Hall Annex, Boston, exten. South Bay Incinerator and addn. two burners. **$1,600,000.** Metcalf & Eddy, Statler Bldg., Boston, consult. engrs. CD 11/29/51.

▲ **Mich., Livonia**—City, William Brashear, mayor, 33001 Five Mile Rd., bond election Sept. 30, Storm Drainage Proj., incl. trunk sewer lines southeast section of city, **$10,000,000**. Hubbell, Roth & Clark, Inc., 954 North Hunter Blvd., Birmingham, consult. engr. CD 2/12.

▲ **N. J., Hanover**—Hanover Twp., sewerage facilities, incl. lateral and intreceptor sewers and treatment plant. **$2,060,000.**

N. J., Hopewell—Hopewell Borough Council, preliminary surveys sewage disposal plant. **$722,000**. Gibbs & Hill, 461 8 Ave., New York, N. Y., consult. engrs. C. E. Jaynes, Hopewell, engr. CD 1/7.

▲ **N. J., Ridgewood**—Village, Village Hall, sewerage treatment plant addn., in Glen Rock. **$1,600,000.** Charles H. Capen, RFD, Wanaque, consult. engr. CD 3/30/56.

▲ **New York**—President Richmond Boro, Boro Hall, St. George, combination sewer, West Brighton, Broadway, Alaska Sts., etc., **$2,345,000**. To go ahead 1957-58; storm water and sanitary sewers and grading Adelaide Ave., etc. **$150,400;** sanitary sewers in Woodland Ave., etc. **$240,000;** combined sewer in Spring St., etc. **$186,000;** sanitary sewers in Bayview Ave. (Princess Bay) **$930,000;** sanitary sewers Huguenot. **$3,000,000.** storm water outlet on Arbutus Ave. **$330,000**. To go ahead 1957-58.

O., Canton—City, City Hall, relocation of west side interceptor sewer. **$564,643**. Floyd G. Browne & Assoc., 123 W. Church St., Marion, consult. engrs. CD 8/15/49.

▲ **Pa., Harrisburg**—Comrs. Swatara Twp., Twp. Bldg., Route 230 By-Pass, Harrisburg, sewerage sys. for Rutherford Heights Section of Twp., **$460,000;** sewerage sys. to serve the communities of Enhaut, Oberlin and Bressler, **$840,000**. Glace & Glace, 1001 N. Front St., consult. engrs.

▲ **Pa., Manheim**—Manheim Twp., Manheim, sanitary sewerage sys., incl. treatment plant. **$2,500,000.**

▲ **O., Portsmouth**—City, City Hall, **$1,200,000** bond election Nov. 5, storm sewers imprvs. Greeley & Hansen, 220 S. State St., Chicago, Ill., consult. engrs. CD 1/31/45.

▲ **Tex., Abilene**—City, City Hall, sanitary sewer lines, misc. sys. work, **$1,050,000**. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 12/9/53.

▲ **Tex., Garland**—City, City Hall, sewer plant on Duck Creek, **$2,000,000;** outfall sewer line **$1,000,000**. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 11/16.

▲ **W. Va., Weirton**—City, City Hall, 3 stage sewage disposal sys., Phase 1, sewers from Ft. Steuben bridge along Ferry Road and beyond Cove Lumber Co., plus branches, **$4,000,000;** Phase 2, interceptors behind Cove Lumber Co. to King's Creek Bowl, **$800,000;** Phase 3, extension of line to airport and Pa. state line along Harmon Creek, **$1,750,000**. CD 12/9/55.

BRIDGES

New York—President Queens Boro, 120-55 Queens Blvd., Key Gardens, Proj. PQ-247, bridge at 202 St. and Long Island R.R. main line, **$634,000**. To go ahead in 1957.

New York—President Queens Boro, 120-55 Queens Blvd., Kew Gardens, Proj. PQ-268, bridge at Atlantic Ave exten. and Long Island R.R. Queens Boro, **$783,000**. To go ahead in 1960.

STREETS AND ROADS

▲ **Ga., Decatur**—Bd. Comrs. DeKalb Co., Court House, voted bonds May 15, sewerage sys. expansion. **$3,500,000**. CD 4/16.

▲ **N. J. Hackensack**—Bd. Freeholders Bergen Co., Administration Bldg., imprv. Schraadenburgh Rd. from Durie Av., Closter to Harrington Ave., Harrington Park, **$200,000**. Hobelman, Argenti & Kuhn, 381 Broadway, Westwood, consult. engrs.; wid'n. Forest Avenue, from 20 to 42 ft., Emerson, **$950,000**. Boswell Eng. Co., 6 Morningside Lane, Ridgefield Park, Consult. engr.

▲ **Tex., Abilene**—City, City Hall, paving city streets, **$1,000,000**. Freese & Nichols, 407 Danciger Bldg., Fort Worth, Tex., consult. engrs. CD 12/31.

▲ **Tex., Sherman**—Grayson Co., c/o Comrs. Court, Sherman, over 200 mi. country road work, FTM and laterals mostly. **$2,500,000**.

AIRPORTS

▲ **Ky., Hazard**—AIRPORT—City, c/o Dener Daniels, pres. People's Bank, Hazard, airport at Hall's Flat, incl. terminal, hangars, 5,000 ft. landing strip, **$2,000,000**. H. A. Baker, Bakers Bldg., Hazard, Ky., preliminary planning archt. CD 12/27/44.

▲ **La., Lake Charles**—AIRPORT IMPRVS.—Calcasieu Parish Police Jury, Court House, Lake Charles Municipal Airport imprvs. **$3,000,000**. D. W. Jessen & Assocs., 18 Kaufman Bldg., consult. engrs. Bids in September or October. CD 12/29/44.

FOREIGN

▲ **Netherlands West Indies, Aruba**—HOTEL—N. V. Aruven, Aruba, N.W.I., plans by Morris Lapidus, 528 Lincoln Rd., Miami Beach, Fla., U.S.A., 1 and 6 story, hotel with swimming pools. **$3,000,000.**

PUBLIC BUILDINGS

Ala., Alabaster—HOSPITAL—Alabaster-Shelby County, Alabaster, 35 bed hospital, **$540,000.**

Ala., Tuscumbia—HOSPITAL—Colbert County Hospital, Tuscumbia, 60 bed hospital annex. **$987,000.**

▲ **Ariz., Tempe**—DORMITORIES—State of Arizona, Campus, Phoenix, two 3 story dormitories, Arizona State College. **$1,000.000.**

▲ **Calif., Alhambra**—SCHOOLS—Alhambra City Elementary School Dist., 601 N. Garfield Ave., defeated **$3,627,000** bonds June 4, schools, CD 4/11.

▲ **Calif., Alhambra**—SCHOOLS—Alhambra High School Dist., 308 W. Main St., defeated **$5,769,000** bonds June 4, high schools. CD 4/11.

▲ **Calif., Arcadia**—SCHOOL—Arcadia Unified School Dist., Arcadia, defeated **$3,450,000** bonds May 17, schools. CD 4/30.

▲ **Calif., Fontana**—SCHOOLS—Fontana Unified School Dist., 8425 Mango Ave., voted bonds May 17, finance addns., to existing Junior High Schools and constr. new one. **$5,000,000.** CD 3/13.

Calif., Hawthorne—SCHOOL—Wiseburn School Dist., Hawthorne, bond election Nov. 5, constr. schools. **$700,000**. Bond election May 17 defeated. CD 5/7.

▲ **Calif., Indio**—SCHOOL—Indio Elementary School Dist., Indio, voted bonds May 17; elementary school, Van Buren St. and Jackson, Hoover, Palm Desert and Jefferson School addns. **$1,250,000**. CD 1/24.

▲ **Calif., LaPuente**—SCHOOL—Bassett School Dist., 546 N. Vineland Ave., voted **$1,000,000** bonds May 17, school. CD 5/4.

▲ **Calif., La Puente**—SCHOOL—Hudson School Dist., 15839 E. Rowland St., voted bonds May 17, school facilities **$1,000,000**. CD 4/25.

▲ **Calif., La Puente**—HIGH SCHOOL—La Puente High School Dist., Glen A. Wilson, supt., 15615 E. Nelson Ave., voted **$3,500,000** bonds May 17 constr. Los Altos High School, Los Robles and Turnbull Canyon Rd. CD 2/28.

▲ **Calif., Los Angeles**—SCHOOL—Bd. Educ., 1425 S. San Pedro St., plans by Balch, Bryan, Perkins & Hutchason, 2933 Rowena Ave., William Howard Taft High School, Woodland Hills. **$4,000,000**. CD 4/8/55.

▲ **Calif., Los Angeles**—SCHOOL—Bd. Educ., 1425 S. San Pedro St., plans by Robert Trask Cox, 2607 Hyperion Ave., Zone 27, Richard E. Byrd Junior High School, Sun Valley. **$2,400,000**. CD 4/8/55.

Calif., Ontario—SCHOOL—Ontario School Dist. 950 "D" St., plans by Jay Dewey Harnish & Eugene Weldon Fickes, 222 E "B" St., 30,000 sq. ft. wood, frame, stucco Elementary School No. 19. **$600,000.**

▲ **Calif., Santa Barbara**—POLICE DEPT. and FIRE STATION—City, City Hall, voted bonds May 7, Proposition I, police dept. bldg. **$817,000;** Proposition II, fire station, **$350,000**. CD 4/18.

▲ **Colo., Denver**—HOUSING—Denver Public Housing Auth., 1449 Navajo St., 1,500 units in 3 or 4 housing projects. **$15,000,000**. CD 12/16/49.

▲ **Conn., New Britain**—SCHOOL—Town, Town Hall, 27 Hillside Pl., plans by Willard Wilkins, 945 Asylum Ave., Hartford, North Junior High School, east side of Farmington Ave. **$2,000,000**. CD 10/11, under LB.

▲ **Conn., New Britain**—SCHOOL—Town, Town Hall, 27 Hillside Pl., plans by Willard Wilkins, 945 Asylum Ave., Hartford, Southwestern Junior High School, Steele St. **$2,000,000**. CD 9/28, under LB.

Fla., Miami—SCHOOL—Bd. P. Instruction Dade Co., Administration Bldg.; 275 N. W. 2 St., plans by Watson & Deutschman, 811 Chamber of Commerce Bldg. Junior High School, Central Hialeah Section, Hialeah, **$500,000**. CD 11/3/55.

▲ **Ga., Decatur**—COURT HOUSE—Bd. Comrs., DeKalb Co., Court House, voted bonds May 15, court house annex, **$3,500,000,** hospitals **$1,405,000**. CD 4/16.

▲ **Ill., Chicago**—APARTMENTS—Chicago Housing Auth., 608 S. Dearborn St., plans by L. R. Solomon & Assocs., 61 W. Superior St., 396 unit apartment bldgs., vicinity 29th St. and Cottage Grove. **$4,000,000**. CD 2/2/50.

▲ **Ind., South Bend**—SCHOOL—School City of South Bend, 228 S. St. Joseph St., plans by Maurer & Maurer, LaFayette Bldg., Washington High School with gymnasium, auditorium and swimming pool, WS of city, **$4,000,000**. CD 9/20/55.

Iowa, Odebolt—SCHOOL—Community School Dist. plans by Harol Spitznagel & Assocs., Sioux Falls, S. D., school addn. **$785,000.** Bids in August. CD 12/31.

Kan., Concordia—COURT HOUSE—Cloud Co., Concordia. Plans by Williamson & Loebsack, 2015 Gage St., Topeka, court house. **$500,000.** CD 5/5/50.

▲ **Ky., Owensboro**—COURTHOUSE, etc.—Daviess Co., Fiscal Court, bond election Nov. 5, courthouse and jail. **$1,250,000**.

▲ **La., Baton Rouge**—DORMITORY—Louisiana State University, Baton Rouge, plans by Brocato & Benlin, 2709 Florida St., men's dormitory. **$1,100,000.** Bids soon. CD 12/13/49.

La., Mansura—HOUSING—Housing Auth. of Mansura, Mansura, plans by C. Scott Yeager & Assocs., 211 Lee St., Alexandria, 75-low-cost housing units **$750,000**. CD 11/6/52.

▲ **Mass., Boston**—MAINTENANCE SHOPS, etc.—City, Trustees Boston City Hospital, 818 Harrison Ave., plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., central storage and maintenance shops bldg. **$2,000,000.** Constr. 1958. CD 9/21/48.

▲ **Mass., Cambridge**—SCHOOL—City, City Hall, plans by M. A. Dyer Co., 24 School St., Boston, Charles G. Harrington Elementary School, Donelly Field, Cambridge St. **$2,500,000**. CD 2/7.

Mass., Hingham—SCHOOL—Town Junior High School Comn., Supt. Schools, 229 North St., Junior High School, **$700,000** Constr. in 1958.

Mass., Marlboro—SCHOOL—City, Supt. Schools, High School, Main St., high school, Hosmer St., south of Eager and Main Sts. **$600,000**. Constr. in 1958.

Me., Auburn—SCHOOL—City, Lewis Webber, supt. Schools, Auburn, plans by Alonzo J. Harriman, Inc., 292 Court St., high school, Franklin Keene Property. **$600,000.** Constr. 1958.

▲ **Mich., Addison**—SCHOOL—Addison School Dist., Addison, defeated bonds May 28, conversion of present high school to Junior High School, elementary school to serve Somerset and Somerset Center, Manitou Beach School addn. **$1,700,000**. CD 4/26.

Mich., Midland—SCHOOLS—City, Bd. Educ., R. W. Caldwell, secy., Midland, plans by Franz & Spence, 236 North Washington St., Saginaw, elementary school, Stumpfig and Sugnet Rds. **$350,000;** plans by Jahr-Anderson, Marchilda, 15011 Michigan Ave., Dearborn, elementary school, Eastman Rd. and Dilloway Dr. **$400,000.** CD 8/23/56.

Mo., Rushville—SCHOOL—Reorganized School Dist. R-5, Rushville, Junior-Senior High School. **$500,000.**

▲ **N. J., Essex Fells**—SCHOOL—Bd. Educ., Essex-Roseland Regional High, constr. high school for West Essex Co. communities. **$3,000,000.**

▲ **N. J., Morristown**—HOUSING—Morristown Housing Auth., Vail Place, plans by Isadore Candeub, 359 S. Orange Ave., Newark, Title I Housing in the "Hollow," Spring and Water Sts., **$1,147,259;** plans by Walter C. Pfeiffer, 109 Washington St., 50 small houses on 6 acre tract on Corey Rd. off Speedwell Ave., under Sec. 221 of Title I of Housing Act, **$450,000.**

N. J., Mountain View—SCHOOL—Bd. Educ. Wayne Twp., Preakness School addn. and renovation, **$537,000,** Emil Schmidlin, 586 Central Ave., East Orange, consult. engr. Target for completion Sept. 1958. CD 4/2.

▲ **N. J., Paterson**—SCHOOL—City, City Hall, school for First Ward area. **$1,475,000.**

N. J., Ridgewood—SCHOOL—Bd. Educ., 49 Cottage Pl., plans by Sherwood Mills & Smith, 65 Broad St., Stamford, Conn., school, East Glen Ave. **$550,000.**

▲ **N. J., Ridgewood**—SCHOOL—Bd. Educ., 49 Cottage Place, plans by Sherwood, Mills & Smith, 65 Broad St., Stamford, Conn., 20 classroom and 2 kindergarten school, West Ridgewood Ave., **$1,200,000.**

▲ **New York**—SHOP, etc.—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Proj. S-134, central repair shop, garage for Districts 53, 54 and 55, Training School for Sanitation Dpt., Queens Boro. **$15,000,000.**

N. Y., Hilton—SCHOOL—Hilton Central School Dist., Hilton, voted bonds May 15, Junior-Senior High School addn. **$600,000**. CD 5/2.

▲ **N. Y., New York**—HOUSING—New York City Housing Auth., 299 Broadway, Zone 7, plans by Holden, Egan, Wilson & Corser, 215 E. 37 St., Zone 16, N.Y.C.-27, Benjamin Franklin Houses, incl. fourteen 20 story apartments, 31 stores, 1 to 3 Ave. E. 106 to E. 108 Sts. **$20,900,000.** CD 4/6/55.

▲ **N. Y., New York**—SCHOOL—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-354, P.S. 91 modernization, Forsyth St. **$1,070,000**. To go ahead after 1962.

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-376, P.S. 126, **$2,600,000**. To go ahead after 1962.

▲ **N. Y., New York**—SCHOOL—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-423, Junior High School No. 56, **$4,150,000.** To go ahead after 1962.

▲ **N. Y., New York**—SCHOOL—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-791, Central Commercial High School, **$6,350,000**. To go ahead after 1962.

▲ **N. Y., New York**—SCHOOL—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-819, Junior High School 40 addn., modernization, Prospect Ave., Bronx Boro, **$1,270,000**. To go ahead After 1962.

▲ **N. Y., New York**—SCHOOL—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-839, P.S. 69 addn., Theriot Ave., Bronx Boro, **$1,870,000**. To go ahead after 1962.

▲ **N. Y., Rush**—SCHOOL—Rush-Henrietta School Dist., Charles H. Roth, Sr., pres., Rush, defeated bonds May 7, elementary school and Junior High School **$3,846,000**. CD 4/9.

O., North Ridgeville—SCHOOLS—Bd. Educ., Ridgeville Local School Dist., bond election Nov. 5, schools. **$575,000.**

O., St. Marys—SCHOOLS—Bd. Educ., bond election Nov. 5, schools. **$995,000.**

O., Sandusky—SCHOOL—Margaretta Bd. Educ., Sandusky, bond election Nov. 5, elementary school and present elementary school addn. **$775,000.**

O., West Milton—SCHOOL—Bd. Educ., Milton-Union School Dist., West Milton, bond election Nov. 5, grade school. **$625,000.**

▲ **Tex., Austin**—PHYSICS, etc.—University of Texas, Main Administration Bldg., plans by Fehr & Granger, 402 E. 5th St., and Page, Southerland & Page, archts.-consult. engrs., 602 W. Ave., physics bldg. **$1,050,000.** Bids by October. CD 3/19; chemistry or science wing. **$1,000,000,** Bids early in 1958, CD 3/19.

▲ **Tex., Corpus Christi**—SCHOOL—Tulosa-Midway Independent School Dist., 1925 Tulosa Hy., plans by McCord & Lorenz, 305 Beverly Bldg., high school. **$1,500,000.** CD 7/24.

▲ **Tex., Fort Worth**—SCHOOL—Fort Worth Independent School Dist., 1300 E. Lancaster St., plans by Jos. R. Pelich, 1203 Trans American Life Bldg., Meadowbrook High School. **$1,000,000.** CD 4/13/56.

▲ **Tex., Midland**—COURTHOUSE—Midland Co., c/o Courthouse, plans by Hybes & Kirby, Lubbock, courthouse. **$1,500,000.** CD 12/12/51.

▲ **Tex., Seagoville** — SCHOOL — Seagoville Independent School Dist. voted bonds July 27, school sys. imprvs. and renovation to bldgs. **$500,000;** elementary School. **$500,000;** high school unit **$500,000.** CD 7/23.

▲ **Utah, Logan**—FORESTRY, etc.—Utah State Bldg. Bd., 419 State Capitol, Salt Lake City, plans by Schaub & Haycock & Assocs., 74 N. Main St., forestry bldg. for State University of Applied Sciences. **$2,250,000;** plans by Deseret Archts. & Engrs., 217 Ness Bldg., Salt Lake City, U., engineering and physical science bldg. at Utah State University of Applied Sciences, **$2,350,000.** CD 12/6.

Vt., Winooski—SCHOOL—Winooski School Dist., Robert Lull, supt., plans by Julian W. Goodrich, 930 Shelburne R., South, Burlington high school, Hawthorne Field, **$755,000.** Jennison Eng., Inc., 15 Center St., Burlington, mechanical engr. Bids September. CD 8/3/54.

Wash., Centralia—HIGH SCHOOL—School Bd. plans by W. A. Johnson & Assocs., 3506 Broadway, Everett, 4 masonry bldgs. for Junior High School, **$830,000.** Bids to be called by Sept. 1. CD 5/23/56.

Wash., Edmonds—SCHOOL—School Dist. 15, election Oct. 1, special levy to complete financing elementary school, **$500,000.** Bond election of May 28 defeated, D. Miller, Edmonds, archt. CD 4/26.

Wash., Naselle—SCHOOL—School Dist. No. 155, voted $78,000 bonds May 14, high school. **$425,000.** CD 4/16.

W. Va., Fairmount—DORMITORIES—Fairmount State College, Bd. Control, Charleston, dormitory for men, Morrow Hall Dormitory for Women addn. **$675,000.**

▲† **Wyo., Cheyenne**—HOSPITAL—U. S. Dpt. of Army, Veterans Admin., 2002 Capitol Ave., plans by Porter & Porter, 1009 E. Lincoln Way, hospital bldg. hospital wing, clinic and administration wing, **$2,000,000.** CD 5/11/51.

Wyo., Sheridan—COLLEGE—Northwest Wyoming Community College, 6th and Saberton Sts., plans by Goodrich & Wilking, 722 Yellowstone St., Casper, college addn. **$800,000.** CD 5/22.

COMMERCIAL BUILDINGS

▲ **Ala., Florence**—HOSPITAL—Eliza Coffee Memorial Hospital, W. Alabama St., 65 bed hospital addn. **$1,200,000.** CD 12/19/55.

Calif., Atherton—DORMITORY, etc.—Memlo School & College, Alejandra Ave., plans by J. S. Gould, 407 Sansome St., San Francisco, 2 story dormitory and 1 story student union bldg. **$500,000.** CD 3/26.

▲ **Colo., Boulder**—HOTEL—Wayne Phipps, Allen Lefferdink, Harl Douglass, Lyal Quinby, Alton Hatch, Wm. G. Arnold Sr., Boulder, plans by James M. Hunter, archt. consult. engr., Boulder. 8 story hotel. **$2,000,000.**

Conn., Norwalk—SHOPPING CENTER—Meritt Parkway Associates, Inc., Main Ave., shopping center, incl. supermarket and other stores, on 13-acre tract, Main Ave. **$500,000.**

▲ **Ill., Arlington Heights**—APARTMENTS—Owner, c/o James W. Viger, archt., 1000 E. N. W. Hy., Mt. Prospect, four apartment bldgs., 96 units, with parking area, Kasper and Salem Sts. **$1,000,000.**

▲ **Ill., Northbrook**—SHOPPING CENTER—Northbrook Commercial Trust, c/o Clarence L. Dahlquist, archt., 1625 Glenview Rd., Glenview, 22 unit shopping center addn. to commercial area located at Cherry and Church Sts. **$1,500,000.**

▲ **Ill., Palatine**—SHOPPING CENTER—Winston Park Northwest Corp., 22 W. 48 St., New York, N. Y., plans by Erwin Gerber, 1130 Raymound Bldg., Newark, N. J., 102 unit Northwest Plaza Shopping Center, with parking area, Northwest Hy. and Baldwin Rd. **$16,000,000.**

▲ **Ill., St. Charles**—SHOPPING CENTER—Irwin Adelman, c/o Arthur Rubloff & Co., 111 W. Monroe St., Chicago, plans by Clarence Dahlquist Assocs., 1625 Glenview Rd., Glenview, Valley Shopping Center with parking area, Hy. 64 E. of Rte. 30 cut off. **$1,000,000.**

(Continued on page 94)

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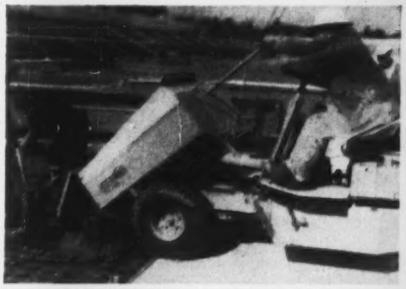

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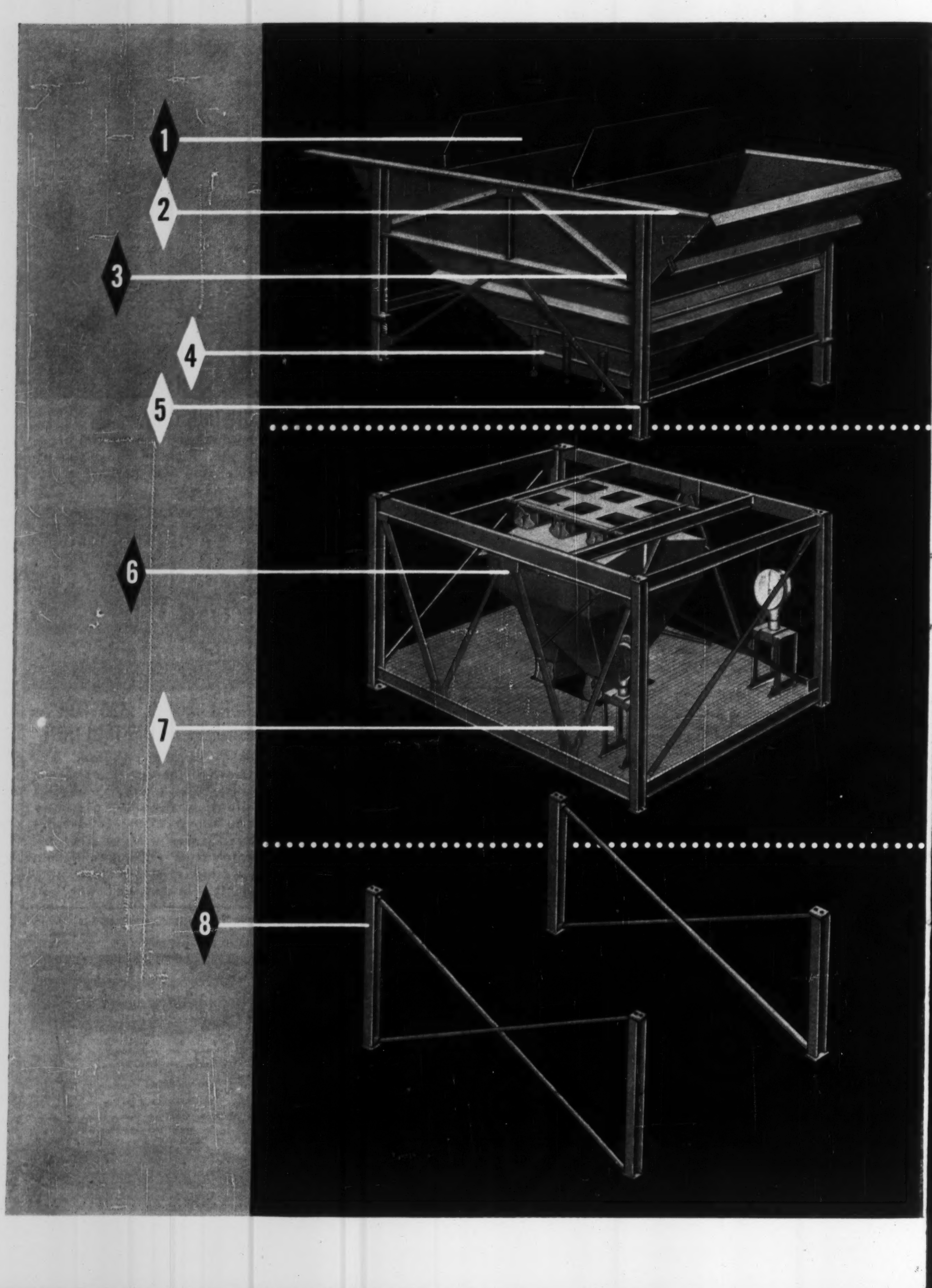

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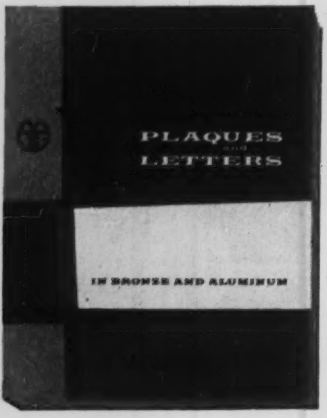

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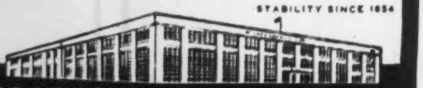

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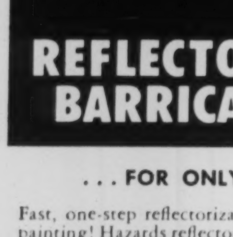

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(Continued from page 91)

Kan., Garden City—HOSPITAL—St. Catherine's Hospital, Garden City, plans by Cayton & Murray, Abilene, hospital addn. **$500,000.**

▲ **Mass., Boston**—APARTMENT—United Business Service Co., Paul Babson, pres., 210 Newbury St., plans by Hugh Stubbing & Assoc., 806 Massachusetts Ave., Cambridge, Mass., apartment, 330 Beacon St. **$2,000,000.** Constr. early 1958. CD 2/8/56.

▲ **Mich., Grosse Point Woods**—STORE—Harry Suffrin, 1133 Shelby St., Detroit, store bldg., Moross and Mack Sts. **$1,500,000.**

▲ **Mo., Kansas City**—HOSPITAL, etc.—St. Joseph Hospital, Linwood and Prospect Sts., plans by Hewitt & Royer, 707 Westport Rd., new wing, incl. surgery, radiology, laboratory, outpatient clinic and emergency care space. **$3,000,000.** Partly financed thru joint St. Joseph-Research Hospital public appeal.

▲ **N. J., Linwood**—OFFICE—Prudential Insurance Co., 763 Broad St., Newark, N. J., about 80,000 sq. ft. floor space regional office bldg. on 31 acre tract, Rte. 9, near Poplar Ave. **$1,000,000.**

▲ **N. J. Vineland**—HOSPITAL—Newcomb Hospital, plans by Helge Westermann, 113 W. 56 St., New York, N. Y., hospital wing. **$1,500,000,** R. G. Vanderweil, 9 Newburg St., Boston, Mass., engr.

▲ **O., Canton**—SHOPPING CENTER—Lawrence Bldg. Co., Earl Lawrence, pres., 125 Valley View, Canton, Country Fair Shopping Center addn. **$1,000,000.**

O., Cleveland—MOTEL—E. S. Freeman, 1785 E. 93 St., Zone 6, plans by Maxwell White, Finance Bldg., Zone 14, 67-unit brick motel, E. 97 St. and Euclid Ave. **$650,000.**

▲ **O., Lorain**—HOMES—Sechel & Sons, Inc., 2544 Lark Moor St., 77 homes for Ford plant workers, Foster Park Rd. in Amherst Twp. **$1,500,000.**

▲ **Pa., Merion**—APARTMENT HOUSE—Jambar Co., 370 Montgomery Ave., plans by Lewis J. Cowan, 1505 Pine St., Phila., 91-unit apartment, Wynnewood Rd. **$1,000,000.**

Pa., Quakertown — SHOPPING CENTER — Quakertown Shopping Center, Inc., 102 Bryn Mawr Ave., Cynwynd, plans by J. Lee Thorne Assocs., 8418 West Chester Pike, Upper Darby, shopping center. **$500,000.** CD 12/2/53.

S. D., Sioux Falls—STUDENT UNION—Augstana College, 29 and S. Summit St., student union bldg. $600,000.

Tenn., Maryville—DORMITORIES—Maryville College, Maryville, 3 story dormitory and remodeling 3 dormitories. **$575,000.**

Tex., Amarillo—COMMERCIAL—W. A. Mays, c/o Mays Bldg., commercial bldg. **$500,000.** Frank G. Harrison General Eng. Co., 210 W. 16th St., consult. engr.

▲ **Tex., Corpus Christi**—MOTEL UNITS—South Coast Motel Co., Inc., c/o B. A. V. Carter, pres., 1307 S. Staples, and Jas. C. Holmes, exec. vice pres., 319 Mesquite, 64 holiday inn motel units, Unit No. 1, 5900 blk Hy. 9, west of Trade Winds Motel **$500,000;** Unit No. 2, 5900 blk. Hy. 9 west of Trade Winds Motel **$500,000.**

▲ **Tex., Dallas**—DWELLINGS—Mahaffer-Wagner Constr. Co., 5622 Dwyer St., 25 dwellings **$363,340;** 22 dwellings **$349,100;** 23 dwellings **$356,000;** 28 dwellings **$370,000** in Lochwood No. 2 subdivision.

Tex., Dallas—HOME FOR RETIRED—Presbyterian Church, 901 N. Lancaster St., "Presbyterian Village" Home for Retired, 22½ acres near Marsalis and Ann Arbor. **$650,000.**

▲ **Tex., Dallas**—DWELLINGS—University Bldg. Co., c/o T. J. Bettes & Co., 212 N. Field St., plans by M. Zollicoffer & Assocs., c/o Meadows Bldg., Dallas, 30 dwellings **$360,000;** 26 dwellings **$349,176;** 28 dwellings **$355,125;** 35 dwellings **$388,150;** 31 dwellings **$368,115,** all in University Terrace.

▲ **Tex., Garland**—DWELLINGS—Shaw & Estes, Contractors, 1407 S. Akard St., Dallas, 28 dwellings, **$367,175;** 30 dwellings **$378,200;** 22 dwellings **$351,000;** 24 dwellings **$356,500;** 20 dwellings **$348,750.**

Tex., Houston—HOSPITAL—Medical Arts Bldg., 1215 Walker St., plans by Grayson Gill, 1913 San Jacinto, Dallas, converting 3 floors existing bldg. into a 90 room private hospital. **$500,000.** H. E. Bovay, Jr., 5009 Caroline St., consult. engr. CD 7/11.

▲ **Tex., Lewisville**—DWELLINGS—George Deutsch, Denton and Lewisville, 25 dwellings **$366,700;** 29 dwellings **$373,500;** 20 dwellings, **$350,000.**

▲ **Tex., Longview**—Y.M.C.A. BLDG.—Young Men's Christian Assn., Dr. W. Morris Ford, pres., Longview, Y.M.C.A Bldg. **$1,000,000.** CD 3/13.

Tex., Midland—DWELLINGS—Stanford & Puckett, 3301 W. Ohio St., 24 brick veneer dwellings, Bauman St. **$351,000.**

▲ **Tex, San Antonio**—DWELLINGS—John M. Schaefer, Builder, 311 Travis Bldg., plans by DeVerne Kittles, 523 W. Hildebrand St., 49 low-priced dwellings **$358,000;** 47 low-priced dwellings **$351,000;** 51 dwellings **$345,500;** 53 dwellings **$355,000,** in Wheatley Heights.

▲ **Tex., San Antonio**—MOTEL—Motor Hotel Corp., c/o Brown & Cowan, archts., 6936 San Pedro Ave., San Antonio, 102 motel units **$600,000.** Dennis E. Feigenspan, 6936 San Pedro Ave., and Barry F. Johnson, 1102 Basse Rd., consult. egrs. CD 8/2.

▲ **Tex., San Antonio**—MOTOR HOTEL—Sam Jorrie, 131 San Pedro Ave., plans by Colbert & Lowrey, c/o owner, 162 unit motor-hotel. **$1,134,000.** CD 6/21.

Utah, Kearns—HOSPITAL—Lion Club, Wayne Wessman, pres., Kearns, hospital, Kearns Blvd., ½ mi. west of business dist. **$500,000.**

Wash., Bellevue—DEPARTMENT STORE—Bellevue Properties, 1603 76 Ave. N.E., plans by J. Klontz & Assocs., Dexter Horton Bldg., Seattle, Zone 4, 2 story, 40,000 sq. ft. department store for lease to J. C. Penney Co. **$500,000.** Bid call expected this summer. CD 7/11/56.

▲ **Wash., Redondo**—HOTEL—W. Feaster, et al, Redondo, resort hotel. **$1,000,000.** Work may begin next year.

▲ **Ont., Hamilton**—APARTMENTS—Bd. Governors, c/o A. M. Keefler, Hamilton General Hospital, Hamilton, block of apartments, for Hamilton General Hospital nurses. **$1,000,000.**

Ont., London—OFFICE—Supertest Petroleum Corp., Ltd., 660 Richmond St., 4 story, 80x120 ft., brick, office, Pall Mall St. **$350,000.**

▲ **Ont., Toronto**—TELEPHONE—Bell Telephone Co. of Canada, 76 Adelaide Ct. W., 4 story, 80x160 ft. telephone bldg., Donlands Ave. and O'Connor Dr. **$1,000,000.**

▲ **Ont., Toronto**—ATHLETIC and RECREATIONAL—University of Toronto, Queen's Park, Toronto, plans by Fleury & Arthur, 85A Bedford Rd., women's athletic and recreational bldg., Huron and Harbord St. **$2,000,000.** CD 2/10/54.

Ont., Toronto—BOWLING ALLEY—O'Conner Bowl, 1401 O'Connor Dr., plans by Kaplan & Sprachman, 46 Yorkville Ave., 1 story steel frame, glass exterior, 24 lane bowling alley and restaurant bldg. **$400,000.**

Ont., Toronto—SHOPPING CENTER—Principal Investments Ltd., 133 Richmond St. W., shopping center, Muirhead's Corners, northwest corner of Woodbine and Sheppard Aves., **$500,000.**

▲ **Que., Yamachiche**—CHURCH—LaFabrique de la Paroisse de Ste. Anne de Yamachiche, plans by A. D. Gascon, 2409 Place Vaudreuil, Three Rivers, reconstr. church. **$1,000,000.**

INDUSTRIAL BUILDINGS

▲ **Fla., Tampa**—BREWERY—Anheuser-Busch, Inc., 721 Pastalozzi St., St. Louis 18, Mo., beer brewery with cap. 800,000 bbls. per year on 160 acre tract to incl. railroad, coastal and trucking facilities. **$3,000,000.** Sverrup & Parcel, 917 Olive St., St. Louis 1, Mo., consult. engr. for studies of entire site area.

▲ **La., Natchitoches**—PLANT—Lanat Laboratories, Inc., c/o A. R. McCleary, pres., Natchitoches, manufacturing plant. **$1,000,000.**

▲ **Mass., Boston**—PUBLISHING—Herald-Traveler Corp., 80 Mason St., plans by Leland, Larsen, Bradley & Hibbard, 711 Boylston St., publishing bldg., south end of town at Albany St., Troy St., Harrison Ave. and Castle St. **$3,000,000.** Cleverdon, Varney & Pike, 120 Tremont St., consult. engrs. CD 5/10.

Mass., Quincy—POWER STATION—Quincy Electric Co., 1 Clivedon St., power station, Broad Meadows Over **$500,000.** Constr. 1958.

Minn., St. Paul—PLANT—Pearson Candy Co., G. Pearson, exec. vice pres., 411 Broadway, plans by Thorshov & Cerny, 400 Metropolitan Bldg., Minneapolis, 90,000 sq. ft. floor space, candy plant, near Rankin St. between West 7th St. and Mississippi River. **$750,000.** CD 3/11.

▲ **N. J., Denville**—PLANT—New Jersey Power & Light Co., State Hy. 5, hydro electric plant in Longwood Valley, Jefferson Twp. **$7,500,000.**

▲ **N. J., Trenton**—INDUSTRIAL RESEARCH PARK—Princessville Research Park Inc., c/o Blackwell, Smith & Lee Jarrell, 500 and also 160 Mercer Rd., Princeton, industrial research park Proposed Site 539. **$1,000,000.**

N. M., Farmington—PILOT PLANT—Sunray Mid-Continent Oil Co., Bisti, N. M., pilot plant injection project in adjacent fields. **$750,000.**

O., Cleveland—PLANT—Ideal Macaroni Co., 2018 Scovill Ave., Zone 15, 40,000 sq. ft. plant, in Cleveland area. **$500,000.**

O., Toledo—WAREHOUSE—Kroger Co., Hill Ave., 66,400 sq. ft. warehouse addn., 18 ft. high storage space, 4 banana-ripening rooms, 80,000 cu. ft. freezer room, loading docks, garage addn., etc. over **$500,000.**

▲ **O., Warrensville Heights**—PLANT—Sobel Corrugated Containers, Inc., 3223 E. 55 St., Cleveland, Zone 27, 180,000 sq. ft. plant, Miles Ave. near E. 186 St. **$1,500,000.**

▲ **Tex., Baytown**—LABORATORY—Humble Oil & Refining Co., 1216 Main St., plans by Milton McGinty, 2425 Ralph St., Houston, Section 2 of laboratory. **$1,500,000.** Harry E. Bovay, 5009 Caroline St., Houston, consult. engr. Plans by Milton McGinty, 2425 Ralph St., Houston, Sec. No. 1 laboratory. **$100,000.** CD 10/23/52.

Tex., Dallas—PLANT—Benjamin Moore & Co., 511 Canal St., New York, N. Y., paint mfg. plant. **$500,000.**

▲ **Tex., Lufkin**—PAPER MILL—Southland Paper Mills, Inc., Lufkin, paper mill expansion. **$4,500,000.**

▲ **Ont., Goderich**—WAREHOUSE, etc.—Dominion Rock Salt Co., Oxford St., Goderich (subsidiary of Dominion Tar & Chemical Co. Ltd., Montreal) warehouse, bin bldg., package bldg., machine shop and tool warehouse, on north side of Goderich harbor. **$6,000,000.** R. M. Way & Co., Ltd., 321 Bloor St. E., Toronto, consult. engrs.

▲ **Que., Beauharnois**—PLANT—Standard Chemical Co. Ltd., Beauharnois, sodium chlorate plant, **$2,000,000.**

UNCLASSIFIED

▲ **Conn., Wallingford**—ELECTRIC LINES, etc.—Town, Town Hall, extending electric lines and constr. new sub-stations. **$1,300,000.**

▲ **Ga., Decatur**—PARK—Bd. Comrs. DeKalb Co., Court House, voted **$1,000,000** bonds May 15, park development. CD 4/16.

▲ **Ill., Jacksonville**—ELECTRIC POWER SYSTEM—City, City Hall, electric power sys. imprvs., addns. **$1,000,000.**

▲ **Minn., Duluth**—TERMINAL—The Duluth Port Auth., K. Duncan, pres., Alworth Bldg., public marine terminal to be named "Arthur M. Clure Terminal" **$10,000,000.** Pfeifer & Shultz, 702 Wesley Temple Bldg., Minneapolis, consult. engrs.

New York—PARK—Dpt. Parks, Arsenal Bldg., New York, Zone 21, Proj. P-398, development of John Golden Park, incl. reconstr. portion of Crocheron Park, Queens Boro. **$811,000.** To go ahead in 1959.

N. Y., Douglaston—Park—Dpt. Parks, Arsenal Bldg., New York, Zone 21, Proj. P-83, development of Alley Park, area west of Cross Island Parkway. **$992,730.**

▲ **N. Y., Prince Bay**—PARK AREA—Dpt. Parks, Arsenal Bldg., New York, Zone 21, Proj. P-132, development of area at Wolfe's Pond Park. **$1,868,500.**

▲ **Ohio**—GAS PIPELINE—Ohio Fuel Gas Co., 109 N. Front St., Columbus, 30 mi. 24 in. gas pipe line in Richland, Seneca and Sandusky Counties. **$3,594,000.**

▲ **O., Toledo**—CARGO TERMINAL—Toledo-Lucas County Port Auth., 241 Superior St., general cargo terminal, etc., on 65-acre tract at Presque Isle at mouth of Maumee River, incl. general purpose marine terminal and tank farm, **$1,530,000**; dredging and filling **$325,000**; 1,100 lin. ft. wharf **$825,000**; 800 lin. ft. steel sheeting **$240,000.** Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York, N. Y., consult. engrs. CD 11/16/55.

▲ **Tex., Beaumont**—COLISEUM—City, City Hall, bond election Aug. 17, "Babe Zaharias Memorial Coliseum" **$2,500,000.**

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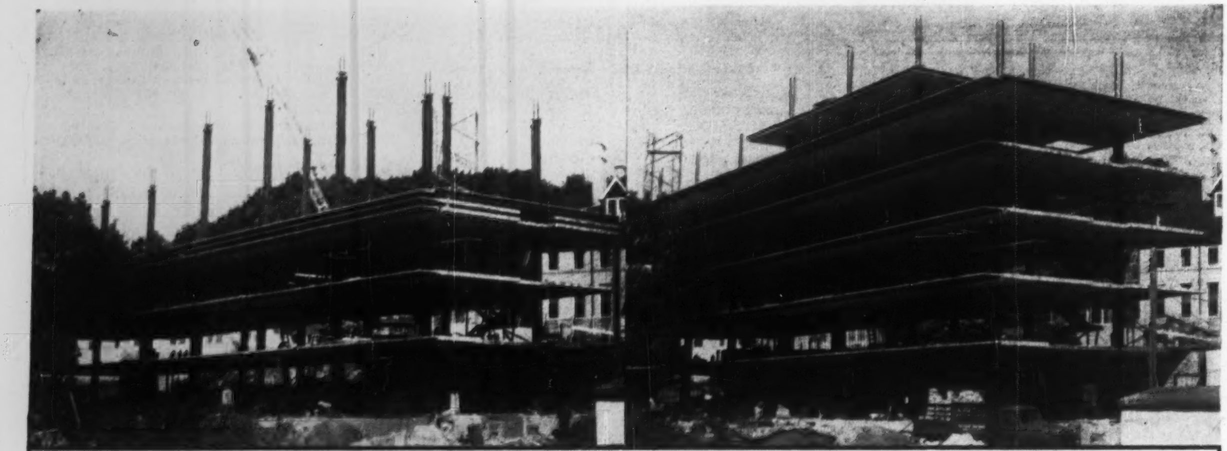

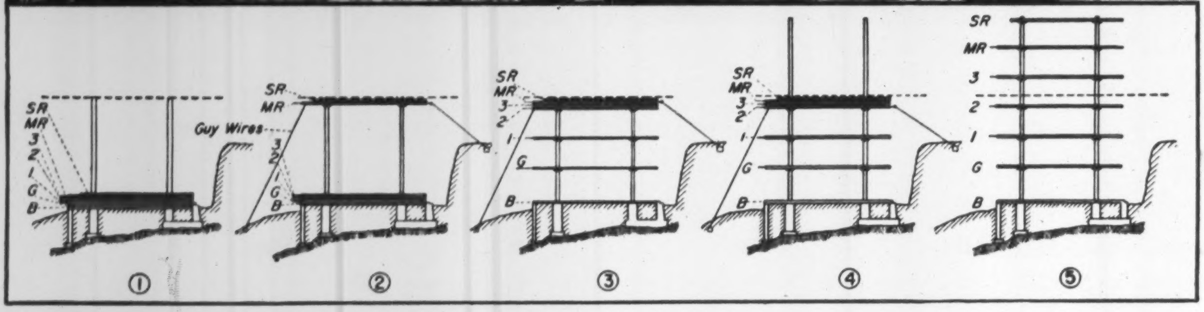

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NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Foxboro**—ADMISSION & TREATMENT BLDG.—BA 9/6—Commonwealth of Mass., Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, M 813, admission and treatment bldg., State Hospital, $2,078,000. Plans deposit $150 refundable. Perley F. Gilbert & Assoc. Inc., Sun Bldg., Lowell, archt. CD 1/15.

▲ **R. I., Cranston**—SCHOOL—BA 9/12—City, Purch. Dpt., City Hall, Phase No. 1, Junior Senior High School city Gravel Bank off Phenix Ave., $1,300,000. Plans deposit $50. Cull, Robinson & Green, 385 Benefit St., Providence, archts. CD 2/18, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **Hartford Electric Light Co.,** 266 Pearl St., Hartford, Conn., Owner Builds, **$1,000,000.** 15-22 kv outdoor substation at United Aircraft Plant, Main St., East Hartford, CONNECTICUT. Stone & Webster Eng. Corp., 90 Broad St., New York, N. Y., engrs. CD 12/19/56.

BUILDINGS—LB & CA

▲ **Park Constr. Co. Inc.,** 40 Court St., Boston, Mass., CA **$2,078,000,** Senior Junior High SCHOOL, East St., DEDHAM, MASS. Town, Edward J. Keeland, Jr., Chr. School Bldg. Comm., c/o Supt. Schools, Bryant St., Dedham, Mass. CD 8/6, under LB.

▲ **George A. Fuller Co.,** 11 Beacon St., Boston, Mass. CA approx. **$5,000,000** manufacturing PLANT, SOUTH BRAINTREE, MASS., Walworth Co., 798 E. 1st St., South Boston, Mass. CD 6/19.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **N. Y., White Plains**—BA 8/28—Westchester Co., James C. Harding, comr., County Office Bldg., White Plains, Contr. 878, structures and equip.; Contr. 878P, plumbing work; Contr. 878H, heating and ventilating; Contr. 878E, electrical work for sewage treatment plant, Sewer Proj. in City of Yonkers. Plans deposit $100. Extended date. CD 7/18.

▲† **Pennsylvania**—BA 10/2—U. S. Eng., 2635 Abbottsford Ave., Phila., Pa., Prompton Dam on Lackawaxen River near Honesdale. CD 2/12.

BUILDINGS—BA

▲ **Md., Baltimore**—SCHOOL—BA 8/28—City, Bureau of Bldg. Constr., 410 Municipal Bldg., Zone 2, brick, concrete, steel, block, Patterson high school, on City Hospital grounds, $3,000,000. Plans deposit $50. Lucius R. White Jr., 1009 N. Calvert St., Baltimore, Zone 2, archt. McNeill & Baldwin, 1025 St. Paul St., Baltimore, Zone 2, mech. engrs. Van R. P. Saxe, 1701 St. Paul St., Baltimore, Zone 2, structural engr. CD 7/11/56.

▲ **D. C., Wash.**—OFFICE—BA 8/29—Peoples Life Insurance Co., 1343 "H" St. N. W., Wash., D. C., selected list of bidders, home office, New Hampshire Ave., G, F, and 25 Sts., N. W., $2,000,000. Mills, Petticord & Mills, 3308 14 St. N. W. Wash., D. C. archts. CD 9/4/56.

▲† **N. J., Fort Monmouth**—CAPEHART HOUSING—BA On Or About 9/18—U. S. Eng., 111 E. 16 St., New York 3, N. Y., 2nd increment, 120 units, wood frame, row type housing, outside utilities, roads, walks, etc. ENG-30-075-58-27. $1,500,000-$1,750,000. Extended date. CD 7/1.

BUILDINGS—SLC

▲ **N. J., Morristown**—HOSPITAL—Bd. Trustees, All Souls Hospital, Rte. 202, soon lets contract 95 bed hospital and enlarging office, laboratory and clinic facilities, $3,000,000. Gerald Phelan, 1051 Bloomfield Ave., Clifton, N. J. member of Fletcher & Thomas, 211 State St., Bridgeport, Conn., archt. CD 10/30/56.

HEAVY CONSTRUCTION—LB & CA

▲ **Baldwin-Lima-Hamilton Corp. and Newport News Shipbuilding and Drydock Co.,** Phila. National Bank Bldg., Phila., Pa., CA **$20,415,600,** total contract with addnl. equip. **$20,686,400.** Contr. NP-3, Spec. PA-N-24002, furnishing, delivering 200,000 hp. turbines, Lewiston Power Plant, Niagara Power Proj., NEW YORK Power Auth. of State of New York, The Coliseum, 10 Columbus Circle, New York 19, N. Y. Bids July 15. CD 8/1, under LB.

BUILDINGS—LB & CA

▲ **John W. Cowper Co.,** Sidway Bldg., Buffalo, N. Y., CA **$1,256,200.** general construction, junior-senior high SCHOOL, Sweet Home & Skinnersville Rd., AMHERST, N. Y. Sweet Home Central School Dist. No. 7, Towns of Amherst & Tonawanda, 664 Sweet Home Rd., Eggertsville, 26, N. Y. Bids July 25. CD 7/15.

▲ **M. J. Peterson, Inc.,** 860 Englewood Ave., Buffalo, N. Y., Owner Builds. **$1,200,000;** 60 HOME development near Ellicott Creek and Parker Blvd., TONAWANDA, N. Y.

▲ **Thomas Constr. Co., Inc.,** 165 Holden Ave., Paterson, N. J., CA **$1,506,540,** est. $2,500,000, general contract, HIGH SCHOOL, Ridgedale Ave., MADISON, N. J. Bd. Educ., Borough of Madison, Madison, N. J. Awarded Aug. 8. CD 9/11/56.

▲ **Babra Development Inc.,** Bayer Ave. and Phillips Rd., Franklin Twp., New Brunswick, N. J., CA est. **$2,000,000,** 3rd and 4th section of Pine Grove Manor HOUSING, Bayer and Phillips Road, Franklin Twp., NEW BRUNSWICK, N. J. Dewey Albert, 185 Montague St., Brooklyn, N. Y. William Chirgotis, 968 Stuyvesant Ave., Union, N. J., archt.

▲ **Daley & Co. Inc.,** 1245 Nottingham Way, Trenton, N. J., CA **$1,327,100,** 2 story, masonry VROOM Bldg. addn., TRENTON, N. J. N. J. Div. Purchases & Property, State House, Trenton, N. J. Bids June 27.

▲ **Bramar Constr. Co.,** c/o Anthony L. Brody, Whitemarsh, Pa., Separate contracts, **$1,250,000.** RESIDENTIAL DEVELOPMENT, Thomas Rd., etc., WHITEMARSH, PA.

▲† **Volpe Constr. Co.,** 1507 Main St. N.W., Wash., D. C. LB **$2,684,000.** est. $2,929,650 (6 bidders) AEC HEADQUARTERS ADDN., GERMANTOWN, MD., Atomic Energy Comn., 1717 H. St. N.W., Wash., D. C.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲† **Guy F. Atkinson Co.,** 10 W. Orange Ave., South San Francisco, Calif., **Ostrander Constr. Co.,** Portland, Ore, and **Soo Contractors,** 64 W. 5 St., Winona, Minn., CA **$21,945,774.** dam and appurtenant works, Hartwell Project, Savannah River, CIVENG-09-133-57-105, GEORGIA and SOUTH CAROLINA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Dec. 4. CD 12/7/56, under LB.

▲† **Belcher Oil Co.,** 1217 Biscayne Blvd., Miami, Fla., CA **$1,243,749,** pumping station No. 7, Central & Southern Florida Flood Control. CIVENG 08-123-57-87, FLORIDA. U. S. Eng., Box 4970, Jacksonville, Fla. Bids July 26, awarded Aug. 7. CD 8/5, under LB.

▲† **Robert E. Lee & Son Inc.,** Box 417, Manning, S. C., LB **$1,522,800** est. $1,782,650 Sch. A; LB **$647,100,** est. $843,850 Sch. B; LB **$2,130,900,** est. $2,626,500 Sch. C; (4 bidders) Levees 23 and 24, Miami Canal, Central & Southern Florida Flood Control, CIVENG 08-123-58-2, FLORIDA. U. S. Eng., Box 4970 Jacksonville, Fla. Bids Aug. 9. CD 7/16.

▲ **Boh Bros. Constr. Co.,** 2400 Cypress St., New Orleans, La., LB **$1,733,000,** (4 bidders) concrete deck and pipe pile structure Perry Street WHARF, NEW ORLEANS, LA., Port of New Orleans, 2 Canal St., New Orleans, La. Bids Aug. 8. CD 7/24.

MIDDLE WEST

BUILDINGS—BA

▲ **Ind., Portland**—SCHOOL—BA 8/29—Bd. Educ., Portland Wayne Twp. Corp., rein-conc. masonry steel high school addn. $1,000,000. Plans deposit $25. Rotz Engr. Co., 1919 N. Meridian St., Indianapolis, mech. engr., McQuire & Shook, 1400 Fletcher Trust Bldg., Indianapolis, archts.

▲ **Wis., Milwaukee**—PLANT—BA 9/10—Evinrude Outboard Marine Corp., 4143 N. 27 St., 1 story, 210x600 ft. plant No. 2 addn., $1,000,000. Eschweiler & Eschweiler, 720 E. Mason St., Zone 2, archts. CD 5/14.

▲ **Wis., Green Bay**—MEMORIAL ARENA—BA 9/11—Brown Co., Court House, veterans memorial arena, $1,468,000. John E. Sommerville, 403 W. Walnut St., archt. CD 4/18/56.

▲ **O., Cincinnati**—OFFICE—Bids Asked—Milner Enterprises Inc., Milner Bldg., Jackson, Miss., (selected list bidders), 30 story, 335,000 sq. ft. structural steel, office and 400-car self parking garage in offset southeast corner Central Parkway and Vine Sts., $7,000,000. Hedrick & Stanley, T. & P. Bldg., Fort Worth, Tex. archts. Robert Cline Inc., Enquirer Bldg., Cincinnati, engr. CD 5/1.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—State Div. Hys., Centennial Bldg., Springfield, rejected bids Aug. 2, 3-span grade separation FAI Route 1 over BNO. R.R.C.T.A. tracks and Congress St. Expressway Sect. 3233-211VA Proj. I-01-4 (42) Dist. 10, Cook Co. LB **$1,193,401;** 3-span I-beam bridge, S.B.I. 146 west of Jonesboro, Union Co., LB **$82,720.** CD 8/6, under LB.

▲ **John Doherty Co.,** 9824 S. Genoa St., Chicago, Ill., LB **$1,191,335,** 1.11 mi. auxiliary outlet storm sewers, Clyde Ave., Central south side sys., CHICAGO, ILL., City, City Hall, Chicago, Ill. Bids July 16.

▲ **Santucci Constr. Co.,** 5035 Church St., Skokie, Ill., LB **$1,194,127,** auxiliary outlet sewers, Roscoe St. between Melvina and Sayre Ave., in Sayre Ave. between Roscoe and Belmont, in New England Ave. from Roscoe to Irving Park Road and in Grace St. between New England and Harlem, CHICAGO, ILL., City, City Hall, Chicago, Ill. Bids Aug. 8. CD 7/26.

▲ **John Doherty Co.,** 9824 S. Genoa St., Chicago, Ill., CA **$1,191,335,** auxiliary outlet storm sewer, Clyde Ave., CHICAGO, ILL., City, City Hall. Bids July 16. CD 8/14, under LB.

BUILDINGS—LB & CA

▲ **Roediger Constr. Co.,** 1729 Superior Ave., Cleveland 14, O., CA **$1,346,000.** STUDENT ACTIVITIES Bldg. No. 1, UNIVERSITY HEIGHTS, O. John Carroll University, University Heights, O. Bids July 31, awarded Aug. 9. CD 8/13, under LB.

▲ **M. J. McGough Co.,** 1954 University Ave., St. Paul, Minn. CA **$1,500,000,** 10 story, brick DORMITORY, Sheridan Road at Kenmore, CHICAGO, ILL. Clark College, Sisters of Charity of the B.V.M., Dubuque, Iowa. CD 7/27.

▲ **Robert G. Regan Co.,** 201 N. Ottawa St., Joliet, Ill. CA **$1,500,000,** SHOPPING CENTER and office, 115 St. and Michigan Ave., CHICAGO, ILL. Teninga & Co., 10833 So. Michigan Ave., Chicago, Ill. Gouvis & Plepel, 10837 S. Michigan Ave., Chicago, archts.

▲ **Romano Builders,** 4915 N. Harlem Ave., Chicago, Ill., CA **$1,300,000,** 1 story, brick RECREATION bldg., 5000 N. Harlem Ave., CHICAGO, ILL., Owner c/o W. B. Cohan, archt., 624 S. Michigan Ave., Chicago, Ill.

▲ **O. E. Madsen & Son, Inc.,** 492 Sexton Bldg., Minneapolis, Minn., LB **$1,048,000** (6 bidders), COURT HOUSE and jail, STEVENS POINT, WIS. Portage Co., C. Kulas, aud., Stevens Point, Wis. Bids Aug. 7. CD 7/29.

▲ **Christman Co.,** 408 Kalamazoo Plaza, Lansing, Mich., CA **$4,243,000,** general contract, HOUSING for married students, EAST LANSING, MICH., Michigan State University, John V. Hannah, pres., East Lansing, Mich. Grand total $5,473,647. CD 2/27.
B. L. Spitzley Heating Co., 2217 W. Joseph St., Lansing Mich., CA **$947,947,** mechanical contract, housing, for married students. (East Lansing, Mich.)
Central Electric Motor & Constr. Co., 3101 S. Logan St., Lansing, Mich., CA **$262,700,** electric contract, housing for married students. (East Lansing, Mich.)

WEST OF MISSISSIPPI

BUILDINGS—BA

▲ **Minn., Anoka**—SCHOOL—BA 8/28—Bd. Educ., Anoka-Hennepin Independent School Dist. No. 220, R. K. Nelson, clk., 1½ story, Coon Rapids Junior High School, $1,600,000. Plans deposit $25. Toltz, King, Duvall, Anderson & Assocs., 1509 Pioneer Bldg., St. Paul, archts. CD 2/14.

▲ **Mo., Fulton**—ADMINISTRATION—BA 9/6—Missouri School for the Deaf, Hubert Wheeler, Comn. of Educ., Jefferson State Office Bldg., Jefferson City, 2 story, bsmnt., rein. conc., frame, masonry, stone trim, academic administration bldg., (Group 11), Missouri School for the Deaf, $700,000. Plans deposit $100. Marcel Boulicault, 411 N. 7th St., St. Louis 1, Mo., archt.-engr. CD 6/14.

▲ **Tex., Houston**—ENGINEERING BLDG.—BA 9/10—University of Houston, 3801 Cullen Blvd., engineering bldg. $5,000,000; Alfred C. Finn, 1005 Bankers Mtg. Bldg., Houston, archt. Rob. J. Cummins, Bankers Mtg. Bldg. and Lockwood, Andrews & Newman, 1010 Waugh Dr., Houston, engrs. CD 11/29.

HEAVY CONSTRUCTION—LB & CA

▲† **Ace Constr. Co.,** 2110 S. 55th St., Omaha, Neb., LB **$1,784,754;** (10 bidders) approach fills, Chicago, Milwaukee, St. Paul and Pacific R.R. Co., Grand River Bridge, near Mobridge, Inv. 25-066-58-2, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Aug. 8. CD 7/30.

BUILDINGS—LB & CA

▲ **Foster Wheeler Corp.,** 165 Broadway, New York, N. Y., CA Est. **$1,000,000.** 1,630 b/d alkylation unit at REFINERY, MANDAN, N. D. Standard Oil of Indiana, 910 S. Michigan Ave., Chicago, Ill.

▲ **M. K. Eby Constr. Co.,** 610 N. Main St., Wichita, Kan., LB **$1,056,990,** general contract, HOME ECONOMICS building, Kansas State College, MANHATTAN, KAN., State Dpt. of Admin., State House, Topeka, Kan., Bids July 30. CD 7/24.
Kendall Plumbing Inc., 1340 S. Washington St., Wichita, Kan., LB **$538,500,** mechanical contract, home economics bldg., (Manhattan, Kan.).

▲† **F. A. Hunter & Assocs.,** 2008 Richmond St., Houston, Tex., LB **$4,998,000;** 345 family HOUSING units, Laredo Air Force Base, Inv. 41-641-58-1, LAREDO, TEX. Purch. & Contg. Office, Box 999, Laredo Air Force Base, Laredo, Tex. Bids Aug. 12. CD 7/11.

▲ **T. C. Bateson Constr. Co.,** 6800 Denton Dr., Dallas, Tex., CA **$10,000,000;** entire proj., 800,000 sq. ft. addnl. SHOPPING CENTER units incl. 85-110 shops, MESQUITE, TEX. Big Town Co., c/o Wes Fenton, 1006 Davis Blvd., Dallas, Tex. CD 8/12.

▲ **Farnsworth & Chambers Co., Inc.,** Box 74, Houston, Tex., LB **$1,091,000;** est. $450,000; Groves Elementary SCHOOL PORT NECHES, TEX. Port Neches Independent School Dist., Port Neches, Tex. Bids Aug. 6. CD 7/18.

▲ **Clanahan Constr. Co.,** Box 567, Tyler, Tex., LB **$1,536,111;** 170,000 sq. ft. Senior High SCHOOL, TYLER, TEX. Tyler Independent School Dist., Tyler, Tex. Bids Aug. 6. CD 6/8.
Natkin & Co., 5639 Dyer St., Dallas, Tex., LB **$462,785,** mechanicals (Tyler, Tex.)

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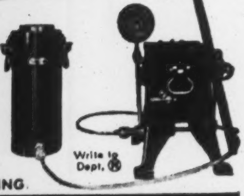


McKIERNAN-TERRY

WIDE-RANGE LINE OF PILE HAMMERS AND EXTRACTORS

Now made in complete standardized line of 11 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Also Sand Drain Equipment and Steam Generators.

Write for free descriptive Bulletins.

Also builders of coal and ore bridges and unloaders, and specially designed machinery.

McKIERNAN-TERRY CORP.
32 Mercer Street, Dover, N. J.

▲ **Montana Builders**, Kalispell, Mont., CA **$1,096,288**; general contract, HIGH SCHOOL, COLUMBIA FALLS, MONT. Columbia Falls High School Dist., Columbia Falls, Mont. Bids July 12. CD 6/18.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† **California**—BA 9/12—U. S. Eng., 180 New Montgomery St., San Francisco, flood control proj., levee constr. on San Lorenzo River and the Branicforte Creek, Santa Cruz Co., ENG 58-1, $3,750,000.

BUILDINGS—BA

▲ **Calif., Carmichael**—SCHOOL—BA 9/10—San Juan Union High School Dist., 3738 Walnut Ave., Encina High School, 1400 Bell Ave., $2,119,517: Saterlee & Tomich, 1521 Eye St., Sacramento, archts. (Correction—Bid Date) CD 8/13.

▲ **Calif., Agnew** — HOSPITAL — BA 9/24 — State Div. Architecture, 1120 "N" St., Sacramento, various hospital bldgs. addns., State Hospital $4,526,500; CD 6/3/55.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

Fredericksen & Kasler, 212 13th St., Sacramento, Calif., CA **$5,750,656**; grading, surf. 29.3 mi. 4-lane divided freeway on new alignment U. S. 66/91 between Victorville and Barstow and 6 structures VIII-SBd-31, C, D, E, F, San Bernardino Co. Bids June 27, awarded July 9, CD 7/8, under LB.

▲ **Baldwin Contrg. Co.**, P. O. Box 311, Marysville, Calif., LB **$3,435,000** (4 bidders) 2nd phase; OLYMPIC WINTER GAME FACILITIES, incl. covered olympic ice arena, 3 ice rinks, dining room, etc. Squaw Valley CALIFORNIA. State Olympics Comn., 465 California St., San Francisco, Calif. Corlett & Spackman, AIA & Kitchen & Hunt AIA, 347 Clay St., San Francisco, archts. Punnet, Parez & Hutchinson, 58 Sutter St., San Francisco, engrs. Bids about July 15. CD 6/11.

BUILDINGS—LB & CA

▲ **Fresno City Unified School Dist.**, 2348 Mariposa St., Fresno, Calif., rejected bids July 10, C. L. McLane HIGH SCHOOL, Cedar and Clinton Sts., FRESNO, CALIF. LB **$4,420,000**. CD 7/19, under LB.

▲ **Diversified Builders, Inc.**, P. O. Box 390, Montebello, Calif. CA **$1,010,500**; to solid rocket PLANT addns. and modifications NIMBUS, CALIF. Aerojet-General Corp., c/o Engrg. Div., 1067 Rancho Cordova, Nimbus, Calif.

▲ **Pacific Coast Builders**, NBR 1 South Park St., San Francisco, Calif. LB **$1,485,250**; (3 bidders) creative ARTS bldg., Pittsburg High School, PITTSBURG, CALIF. Pittsburg Unified School Dist., Pittsburg, Calif. Bids Aug. 8. CD 7/15.

▲ **Dickman Constr. Co.**, 1702 Miramonte Ave., Mountain View, Calif. CA **$1,581,000**; HIGH SCHOOL, Bayshore Hy., East Palo Alto, REDWOOD CITY, CALIF. Sequoia Union High School Dist., Broadway and El Camino Real, Redwood City, Calif. Bids Aug. 7. CD 8/12, under LB.

▲ **Hart & Hynding Co.**, 472 Tehama St., San Francisco, Calif. LB **$1,291,996**; (3 bidders) phase I, HOSPITAL conversion to the University of California Hospital, SAN FRANCISCO, CALIF. Bd. Regents, University of California, (Extension Office) 540 Powell St., San Francisco, Calif. CD 3/17/49.

▲ **W. J. Nicholson Co.**, P. O. Box 390A, Santa Clara, Calif., CA **$1,221,213**; JUVENILE HALL containing detention hall and probation dpt., SAN JOSE, CALIF. Bd. Suprvs. Santa Clara Co., 1st and Rosa Sts., San Jose, Calif. Bids Aug. 5. CD 8/9, under LB.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **Marine Industries Ltd.**, 1405 Peel St., Montreal, Que., CA **$5,041,265**, dredging in Montreal Harbor, MONTREAL, QUE. National Harbors Bd., West Block, Parliament Bldgs., Ottawa, Ont.

BUILDINGS—LB & CA

▲ **Poole Constr. Co. Ltd.**, Edmonton, Alta., CA Est. **$1,000,000**. polyethylene PLANT EXPANSION, EDMONTON, ALTA. Canadian Industries Ltd., 1253 McGill College, Montreal, Que. CD 12/30/53.

▲ **Charles Duranceau Ltee.**, 2545 Rue Jacques Hertel, Montreal, Que., CA **$2,603,951**. 6 story, 98x157 ft., rein.-con., stone, brick, block CITY HALL ANNEX, MONTREAL, QUE. City, City Hall, Montreal, Que. Bids July 10. CD 7/16, under LB.

▲ **Poole Constr. Co. Ltd.**, Hamilton & 8 Sts., Regina, Sask., CA Total est. **$40,000,000**; constr. Boundary Dam and foundations for (1) main power station (2) office and workshop (3) system control bldg. (4) garage (5) coal handling plant (6) weigh scale house, etc. Boundary Dam Steam POWER PLANT, ESTEVAN, SASK. Saskatchewan Power Corp., 1744 Cornwall St., Regina, Sask. Bids July 31, awarded Aug. 8. CD 7/16.

P. W. Graham & Sons Ltd., 701 Ominica St. W., Moose Jaw, Sask., CA **$1,646,545**; superstructures only for above bldgs. (Estevan, Sask.).

(Proposed Advertisements see pp. 115 to 119)

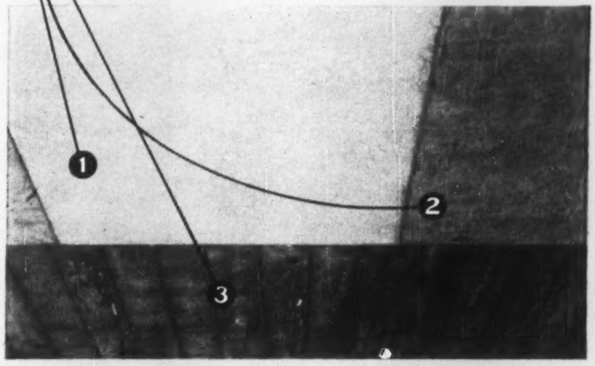
3 reasons why PLYGLAZE® high-density* overlaid plywood outperforms any form material on the market

1. FORMS SMOOTHER CONCRETE

Hard, glossy-smooth fused resin-fiber surfaces form flawlessly smooth concrete, with no trace of grain pattern. Unretouched photo shows marked difference in appearance quality of concrete cast against PlyGlaze, ordinary plywood and shiplap.

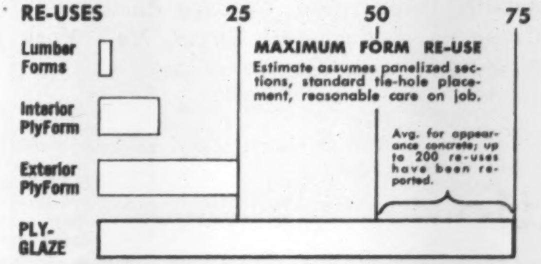
RELATIVE APPEARANCE OF CONCRETE

	Up to 50% of Max. Re-Use	Up to 100% of Max. Re-Use	Where to Use
1. PLYGLAZE	Excellent	Good	For smoothest concrete, maximum re-uses
2. PLYFORM	Good to Fair	Fair to Poor	For fairly smooth concrete, multiple re-uses
3. LUMBER	Poor	Very Poor	Where appearance and re-use not important



2. GIVES MANY MORE RE-USES

PlyGlaze's tough, hard surface stands up under hundreds of pours. With reasonable care, you'll easily get 50 to 75 re-uses. Actually over 200 have been obtained—and even then PlyGlaze continued to form good looking concrete.



Estimate assumes panelized sections, standard tie-hole placement, reasonable care on job.

Avg. for appearance concrete; up to 200 re-uses have been reported.

3. HELPS CUT COSTS TWO WAYS

A. TIME & LABOR SAVINGS—Sharply reduces rubbing and finishing labor. Ceiling slabs can be painted direct, eliminating expensive plastering. PlyGlaze also cuts form construction, erection and stripping time. High re-use factor eliminates form reconstruction during job.

B. LOW COST PER USE—Even when cost is sole criterion, greater number of PlyGlaze re-uses frequently more than make up for higher initial cost, particularly where costs can be amortized over 25 or more pours.

COST PER-SQUARE-FOOT-PER-USE

No. Re-Uses ➤	1	10	25	50	100	200
PLYGLAZE	$0.375	.038	.015	.008	.004	.002
Exterior PLYFORM	.234	.023	.009	Gives Max. 25 Re-Uses		
Interior PLYFORM	.218	.022	Gives Maximum 10-12 Re-Uses			
LUMBER	.110	Gives Maximum 2-3 Re-Uses				

Estimates based on 30 month average for prices quoted by St. Paul & Tacoma for following material delivered in Chicago: ¾" PlyGlaze; ¾" Ext. & Int. PlyForm, mill oiled, edge sealed; 2 & btr. 1" green Douglas fir or hemlock.

POINTS IN BRIEF

- Has the strength, workability and adaptability of ordinary plywood.
- Strips easily; the non-absorbent surfaces will not stick to the concrete.
- No oiling is needed between the pours other than to facilitate cleaning.
- Overlay will not soften or come loose. Unharmed by alkaline reaction.
- Overlay minimizes moisture pickup and the resultant loss of rigidity.

Hard, glossy, translucent high density* fused-resin fiber overlay bonded to both sides of panel. Resin content controlled to give exact amount of hardness and wear resistance required for form work.

Base panel is top quality DFPA-Inspected solid core Exterior fir plywood. Available in all standard sizes, thicknesses.

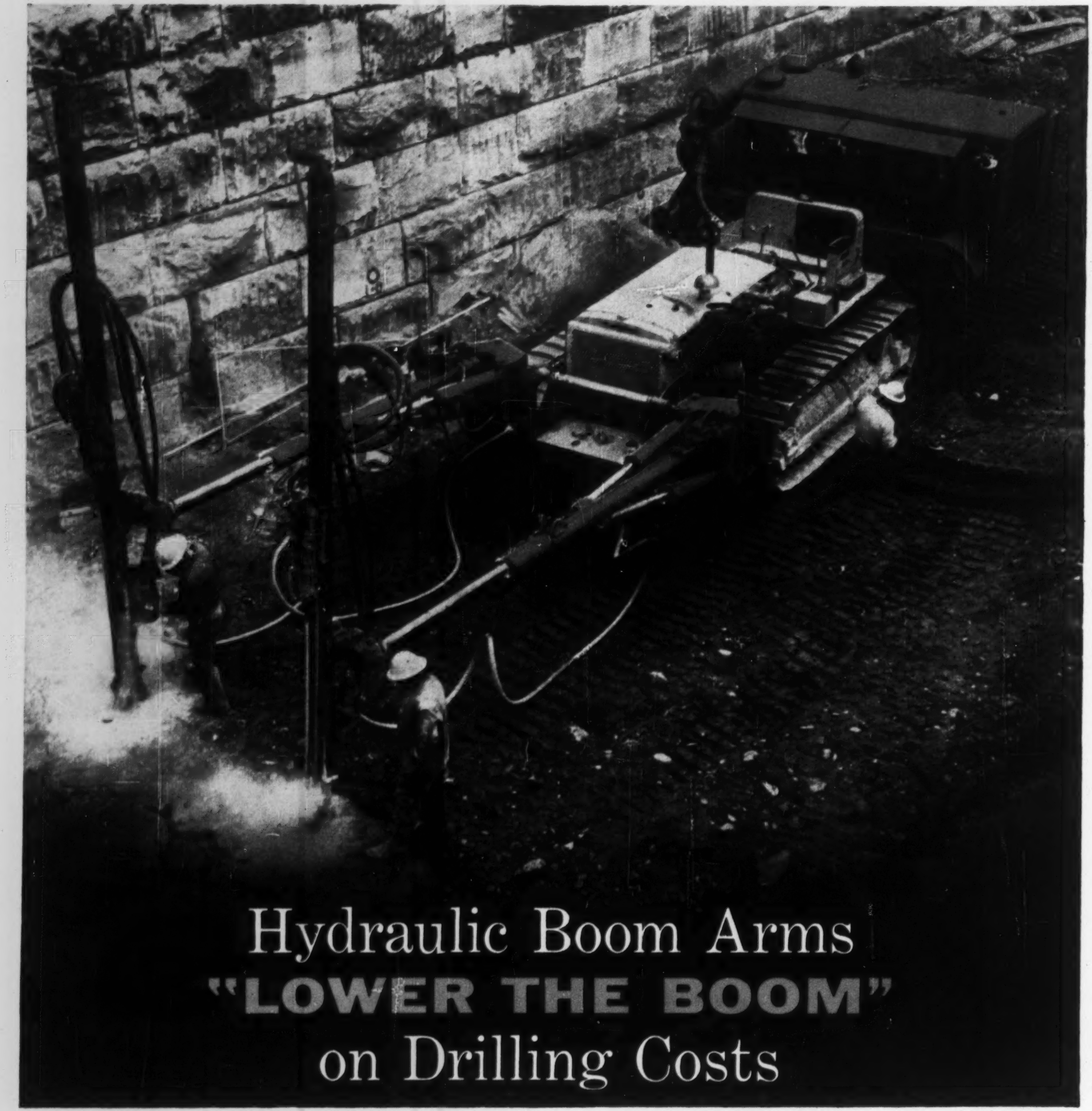
ST. PAUL & TACOMA LUMBER CO.
Dept. RN, Tacoma 1, Washington

Please send the material checked:

☐ PlyGlaze Literature
☐ PlyGlaze Samples

Name..
Firm..
Address...
City...................................... Zone .... State ....

*HIGH DENSITY (glossy, translucent overlay) is special concrete form panel. MEDIUM DENSITY overlay (opaque with texture similar to drawing paper) is paint grade; not for form work.



Hydraulic Boom Arms "LOWER THE BOOM" on Drilling Costs

H-Booms have extra-capacity, double-acting hydraulic cylinders that retract and extend, swing or elevate in a hurry—yet pressures are moderately rated. There's no creeping or drifting! Boom can be extended 6 feet . . . that's an extra foot of length to afford better spacing of holes and greater area coverage without moving the rig.

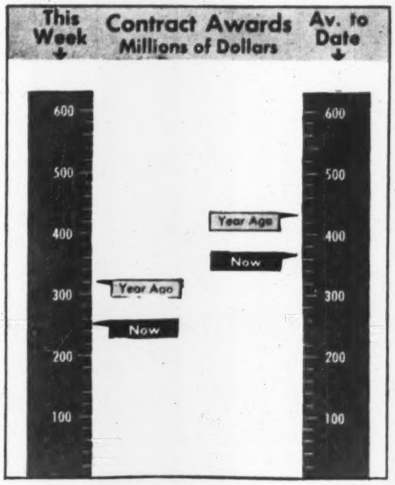
Heavy-duty, Chicago Pneumatic H-Booms can be easily mounted on mine car, track or rubber-tired jumbos. It's a highly productive drilling unit when used on your old tractor. Write for more detailed information. *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, New York.*

Chicago Pneumatic 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 34 wks 1957	Chge '56-'57
	millions		%
Federal	$32.2	$1,770.2	+52
State and Municipal	121.2	4,895.9	+15
Total Public	153.4	6,666.1	+23
Total Private	104.3	5,737.4	−36
U. S. Total	$257.7	$12,403.5	−14

By Type of Work			
Waterworks	$8.4	$243.4	+2
Sewerage	9.3	370.0	−6
Bridges	4.4	476.0	+18
Highways	29.8	2,089.7	+30
Earthwork, Waterways	45.2	729.2	+45
Buildings:			
Public, Excl. Housg.	42.0	1,496.5	+13
Public Housing	8.7	457.4	+110
Private Housing	41.3	1,993.6	−46
Commercial	24.3	1,177.4	−2
Industrial	26.3	2,236.8	−38
Unclassified	18.0	1,133.5	−4
U. S. Total	$257.7	$12,403.5	−14

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

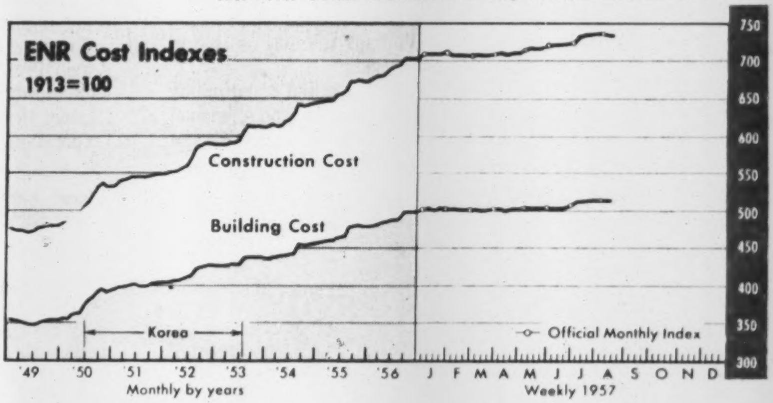
NEW CAPITAL FOR CONSTRUCTION

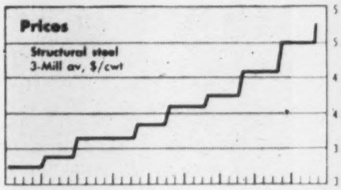
	Week of Aug. 15	Cum. 33 wks 1957	Chge '56-'57
	millions		%
Corporate Securities	$99.9	$3,751.3	+24
State and Municipal:			
All Except Housing	133.4	3,430.7	+14
Housing	...	155.8	+268
Federal Loans	2.7	157.9	+28
Federal Aid	...	2,161.2	+102
Total Nonfederal	$236.0	$9,656.9	+33
Federal Appropriations:			
In U. S.	$13.9	$427.7	−88
Outside U. S.	...	22.8	+43
Total New Capital	$249.9	$10,107.3	−5

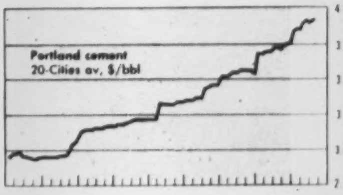
Cost Indexes as of Now

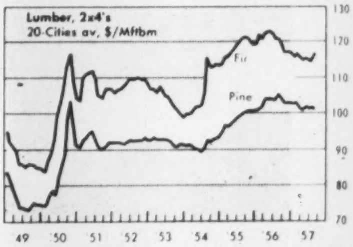
ENR INDEXES (1913 = 100), 20-cities' average	Week of Aug. 15 1957	% Change from July 18 1957	% Change from Aug. 16 1956
Construction Cost	738.30	+0.1	+4.6
Building Cost	516.64	+0.2	+3.1

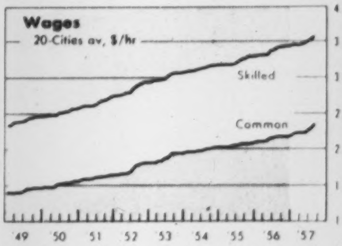
To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518











ENR COST INDEXES IN 22 CITIES, 1913 = 100

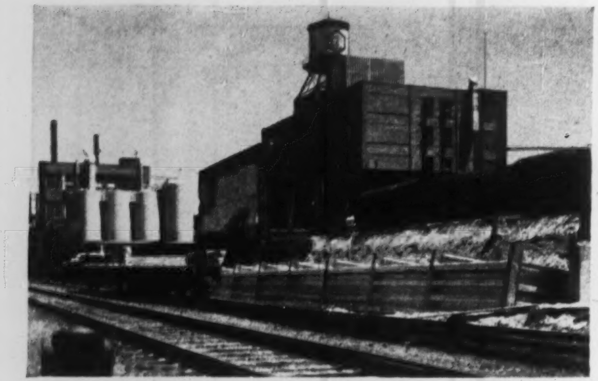
City	Construction Cost Aug. 1957	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost July 1957	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	550	+5.2	+7.6	458	+3.6	+8.0
Baltimore	670	+1.1	+12.6	518	+1.4	+5.5
Birmingham	563	+1.3	+2.6	468	+2.4	+4.5
Boston	774	+3.6	+4.5	532	+2.5	+5.8
Chicago	838	+0.8	+6.9	530	+1.3	+6.0
Cincinnati	751	+1.1	+6.2	507	+1.6	+5.0
Cleveland	863	+0.8	+5.4	529	+1.3	+4.1
Dallas	547	+4.2	+4.4	449	+2.3	+3.5
Denver	709	+1.0	+5.8	521	+2.2	+5.7
Detroit	832	+1.1	+4.0	546	+1.3	+5.4
Kansas City	742	+1.0	+4.5	516	+2.2	+3.8
Los Angeles	778	+6.4	+6.7	508	+1.4	+4.3
Minneapolis	788	+0.9	+5.5	537	+1.3	+4.1
New Orleans	581	+1.6	+3.8	476	+1.9	+4.6
New York	879	+3.3	+4.9	579	+0.3	+2.5
Philadelphia	787	+0.9	+6.8	573	+2.3	+6.5
Pittsburgh	793	+4.1	+10.6	569	+5.2	+9.6
St. Louis	795	+0.8	+5.6	545	+1.3	+4.8
San Francisco	763	+0.5	+6.6	498	+1.0	+5.5
Seattle	758	+0.9	+5.9	469	+2.4	+5.6
U. S.—20 Cities' average	**739**	**+2.1**	**+6.2**	**517**	**+2.0**	**+5.3**
Montreal	587	+0.2	+4.8	452	+0.2	+3.4
Toronto	608	−0.2	+3.2	468	−0.4	+1.3

How Armco Products can help you expand without more land

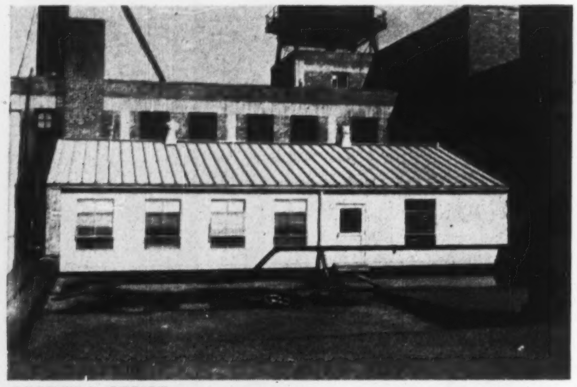
More and more industrial plants are needing more room for expansion. And often, no more ground is readily available. What to do? For some of these problems, Armco Construction Products offer an easy, economical solution. Perhaps you may be able to use some of the ideas shown on this page.

More than 30 Armco Products for drainage and construction work are specified by industrial, highway, railroad and municipal engineers. These products are backed by more than 40 years of manufacturing experience. They are made of strong, durable steel, economical and easy to install, and available in a wide range of sizes.

For complete engineering data on Armco Products, write us. Armco Drainage & Metal Products, Inc., 4947 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

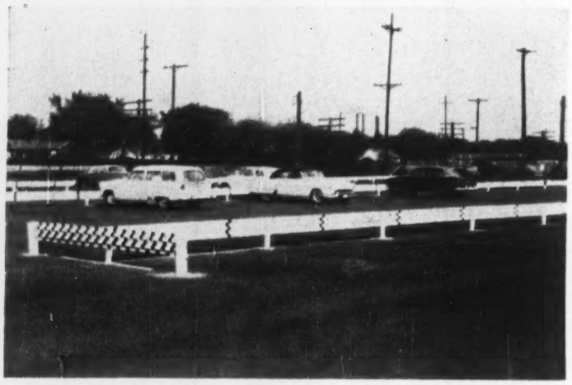


LAND SALVAGED—With an Armco Bin-Type Retaining Wall, shown partly erected, this plant makes maximum use of right-of-way. Tanks at right are buried underground behind the Armco Wall. Ground above the tanks will still be open for expansion.



ROOF-TOP OFFICE—This industrial plant, needing more office room but having no more ground available, installed an Armco Steel Building on the roof of an existing building. The relatively light weight of the frameless Armco Building made this structurally possible.

STREAM ENCLOSURE—These pre-assembled Armco Multi-Plate® Pipe-Arch structures will serve as an industrial stream enclosure. After installation the drainage structures will be covered with earth, hiding the stream and making the area suitable for future expansion.



MORE PARKING SPACE—This is a well-planned industrial parking lot, with marked spaces defined by Armco Flex-Beam® Guardrail. This permits the parking of at least 25% more cars than on unplanned lots. The area saved may be used for additional cars or other expansion.

Armco Construction Products

Bin-Type Retaining Walls • Corrugated Metal Pipe and Pipe-Arch • Paved-Invert® Pipe and Pipe-Arch • Asbestos-Bonded® Pipe and Pipe-Arch • Smooth-Flo® Sewer Pipe • Perforated Pipe • Multi-Plate Pipe, Arch and Pipe-Arch • Welded Steel Pipe • Pipe Piles and Pile Shells • Water Control Gates • Steel Buildings • Flex-Beam Guardrail • Steel Sheeting • Liner Plates • End Sections • Bridge Plank

THE LONGER LOOK:

Materials Prices Going Up—But Slowly

The economy overall is caught in the strongest tide of inflation since the early months of the Korean War. But while construction feels the tide, there are enough crosscurrents to cause an unusual amount of confusion over the outlook for prices of building materials and equipment.

What's been happening, is this:

- Prices of materials and components for construction made their big move before mid-1956 and, in general, levelled off during the following 12 months.
- Consumer prices, which have been highly publicized in recent weeks, went up only slightly (1.6%) in the 12 months ending June 1956 but climbed twice as fast in the next 12 months.
- Construction had to make stiff price increases in both 12-month periods in some areas—such as steel mill products and construction machinery and equipment—but got the benefit of a turn-around in prices of lumber and some other building materials.

Since the last government price indexes were released, there has been another round of steel price increases. Cement and construction equipment manufacturers are expected to post increases during the fall. But, on the down side, reductions have just been announced for some types of flat glass, and further cuts may come in copper prices.

Throughout the next 12 months, the prospect is that prices generally and for construction materials and equipment in particular will show small additional increases but that the rise will not be as large, on the average, as in the last two years.

The main reason for an expected slow-down in the pace of price increases now is that manufacturers will find it tougher to put through higher prices in face of the unused capacity that is building up. Until markets develop to take the larger production these new plants can turn out, increasing capacity can only mean more competitive pressure on prices.

In addition, the Federal Reserve policy of tight money—which will be retained as long as the threat of inflation continues—should hold down the credit-backed spending that would be needed to sustain higher prices.

The build-up of capacity, at a faster rate than demand for factory output, is borne out by the last two McGraw-Hill surveys of Business' Plans for New Plants and Equipment.

The 1956 survey reported that, as of the end of 1955, manufacturing companies were operating at an average rate of 92% of capacity, whereas they would have preferred to operate at only 89% of capacity. The stone, clay and glass industries—largely producers of building materials—were working at 94% of capacity, machinery producers at 87% and iron and steel at 98%.

This year's survey, however, showed that even by the end of 1956, the operating rate in stone, clay and glass had dropped from 94% to 90% of capacity. Iron and steel held firm at 98%, but machinery slipped from 87% to 85%.

During 1957 it is certain that further dips in operating rates are occurring as manufacturing companies carry out plans to expand capacity by 6%. Production meantime has been dragging along below the rate of the late months of 1956.

Tight money, so far, has had the effect of holding down prices only in limited areas. Homebuilding, for example, is heavily dependent on mortgage credit, which has become scarce and expensive. The dip in homebuilding has shown up in weaker markets for lumber and plywood, forcing price cuts.

But the capital goods boom of the last two years has been financed by a big accumulation of reserves from depreciation and retained profits as well as by borrowed money. Further, companies carrying out big expansion programs with good prospects have not balked at high money rates nearly so much as potential home buyers.

Corporations' cash reserves, however, have been drawn down heavily since 1955. And they have had to go into the money market to cover a bigger share of investment costs. Under these conditions, continuance of tight money policies will mean a sharper pinch.

Excess capacity and tight money, however, can only go part way toward holding down one important cause of rising prices—higher costs, and especially higher labor costs. In steel, for instance, the basic price increases of recent years have been closely tied to wage increases. Machinery producers have followed suit, with rising steel prices and their own labor costs.

This factor makes it likely that some prices will keep rising despite increasing unused capacity and stiffer terms on credit buying. Still, chances are manufacturers will have a harder time getting higher prices no matter how justified they feel in asking them.

What's Been Happening to Prices

BLS Indexes:	**June '55-June'56**	**June'56-June'57**
Consumer Price Index	+1.6%	+ 3.4%
Wholesale Price Index	+3.5	+ 2.8
Industrial	+5.1	+ 3.0
Farm products	−0.7	− 0.3
Construction materials & components	+5.9	+ 0.8
Steel mill products	+9.1	+10.3
Building materials	+5.2	+ 0.1
Lumber and wood products	+3.2	− 6.7
Construction machinery & equipment	+9.0	+ 7.4

School Building Tab Would Top $1 Billion in Michigan

Michigan's state and local governments must spend $1.1 billion for school construction during the next six years in order to keep up with the enlargement of the school-age population.

Dr. Lynn M. Bartlett, Superintendent of Public Instruction, also reported that $400 million will be necessary if existing classroom deficits are to be eliminated. Based on 25 pupils per room, Dr. Bartlett said the state is short 10,224 classrooms.

Capital outlays of $147 million during the 1956-1957 fiscal year financed only replacement needs and reduced the classroom shortage by 113 rooms.

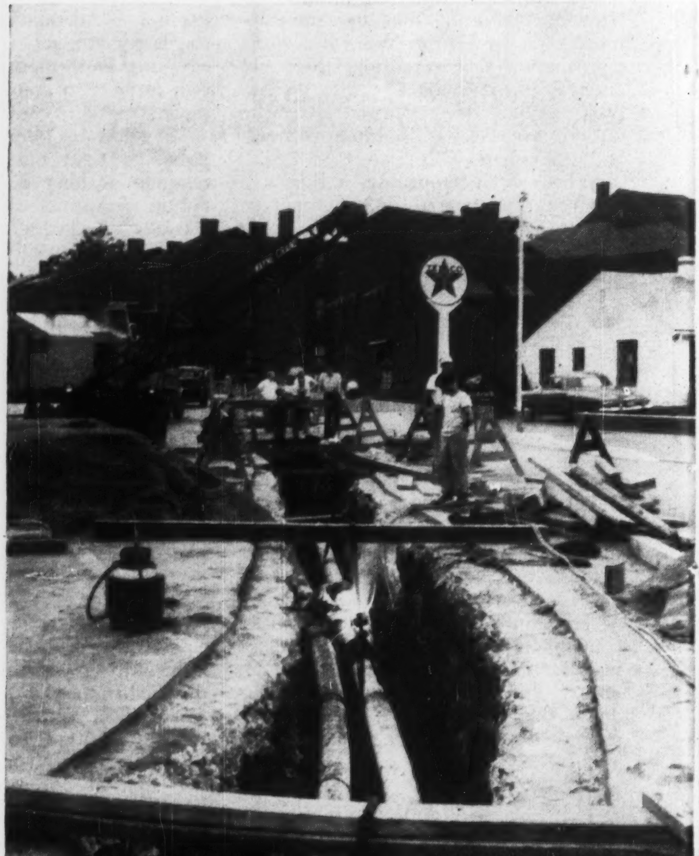
Dr. Bartlett said the average cost of building one classroom now stands at $35,550.

(*B&F continued on page 106*)

Duquesne Light Company uses to bring more electricity

NATIONAL Seamless being lowered through house service lines into trench. Continuous sections between manholes sometimes reached lengths of 1900 feet.

WALLS WITHOUT WELDS



NATIONAL Seamless Pipe being welded into continuous lengths between manholes. Welds were tested at 500 psi—2½ times nominal operating pressure. Flush inner surfaces of welds were assured by pre-flaring the pipe ends and then using a steel backing or chill ring to prevent the formation of welding icicles.

high-pressure pipe-type cable to Pittsburgh

PREPARING to weld pipe for pulling across Ohio River. Pipe for the river crossings has heavier wall, to provide additional margin for burning in case of a line to ground fault in a river section. A 1-inch coating of concrete overall provides negative buoyancy of at least 10 pounds per foot to prevent flotation during installation.

Due to the extensive building program and increased use of air conditioning in downtown Pittsburgh in recent years, Duquesne Light Company found it necessary to expand its electrical facilities in that area. This was accomplished by installing a new substation in the downtown district; and supplying it by two 69 KV feeders from two existing power sources.

The transmission system chosen to handle 100,000 KVA at 69 KV was a high-pressure oil pipe-type cable. Basically, this system consists of seamless steel pipe, joined by welding, functioning as conduit into which is drawn three solid-type paper-insulated oil-impregnated cables. The remaining space within the pipe is filled with high-grade insulating oil which is kept at a nominal operating pressure of 200 psi by automatic pumping facilities. This external pressure on the cable keeps the cable dielectric subject to saturation by insulating oil under all operating conditions so that the formation of voids within the dielectric is virtually eliminated. The pipe-type cable system has a lower failure rate than any other high-voltage cable system in use today.

USS National Seamless Pipe, 8⅝″ O.D., was the conduit used throughout this installation. The exterior was coated with an asphaltic base material for protection against electrolysis and forms of corrosion. After pipe sections were laid, the pipe was put through a rigid evacuation and drying procedure—one of the most critical phases of the job, since moisture in the pipe may lead to displacement of oil in pockets of low points and eventual cable failure.

Critical installations like this call for exceptionally strong, flexible pipe to resist severe internal and external stresses; uniform, dependable pipe that, once installed, will give long, trouble-free service. National Seamless Pipe is chosen consistently because it fits the specifications of every job so well.

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USS

NATIONAL SEAMLESS
PIPE AND TUBES

UNITED STATES STEEL

Glass Price Stable

Demand dips, not prices; only heavy sheet reacts

Despite a sharp drop in housing construction with its adverse affect on sales in the window glass industry, the nation's glass manufacturers have not changed their prices in about a year.

An exception to this price stability shows in heavy sheet glass which has but limited use in housing. This type of glass, however, is not as basic to construction as the single and double strength window glass and plate glass.

Last month the four major manufacturers serving the construction industry's glass requirements dropped prices by approximately 7% on heavy sheet glass. Libbey-Owens-Ford led with a price cut on July 12. Pittsburgh Plate Glass and American Window Glass followed soon after. Fourco Glass Co. made it unanimous with a price cut on July 27.

In contrast, regular window glass and plate prices have been unchanged at the manufacturer's level this year. Pittsburgh Plate Glass price structures, for example, are the same now as they were June 5, 1956.

• **Stable demand**—This is explained by the report that plate glass demand now is close to last year's heavy volume, a situation resulting from the continued high volume of commercial construction. ENGINEERING NEWS-RECORD and CONSTRUCTION DAILY figures show that commercial building contracts are only 2% under the 1957 record and there are indications that this gap may be closed entirely.

However, the drop in housing starts has affected window glass prices at the dealer level. Last fall, dealers based their orders in anticipation of a greater demand than actually developed.

A heavy inventory position and the higher cost of borrowed working capital has now contributed to some easing in glass prices.

CD's monthly glass price report shows that since January dealers in six out of 20 cities have trimmed prices. They are: Dallas, Kansas City, New York, Pittsburgh, St. Louis and San Francisco.

• **Optimism expressed**—Now some optimism is being expressed in sections of the industry. One manufacturer, Libbey-Owens-Ford, said the lower downpayment requirements on housing mortgages insured by the Federal Housing Administration may help later this year.

If housing should be stimulated, the move came none too soon because fall is generally the big ordering season.

Working against a general price reduction in the glass industry despite the easing of demand are rising labor costs and the competition of imported glass. These two factors make it difficult for the manufacturers to justify a price cut.

The import market is a compelling one so far as domestic manufacturers are concerned. According to one dealer in imported and domestic glass, the foreign product is priced lower than domestic glass by at least 10%, and the margin is maintained by closely following the price movements as they occur in the domestic market.

Pier Job Moving

Three contracts awarded for Brooklyn improvement

Award of three contracts totaling $1,679,501 in connection with the Port of New York Authority's $85 million pier development program at the Brooklyn-Port Authority piers was announced last week by the bi-state agency.

At the same time, the committee on construction was authorized to award to the lowest qualified bidder a contract for removal of existing Piers 8, 9 and 9½ and the construction of the substructure and deck for the new $5.2 million two-berth Pier 2 in the Fulton Terminal Area.

The contract awards included a $1,035,223 negotiated contract for dredging and fill in connection with the $7,350,000 Pier 1 in the Fulton Terminal Area to the Great Lakes Dredge and Dock Co., New York.

The dredging of some 220,000 cu yd of material, removal of 200 timber piles and the placement of 276,100 cu yd of sand and rock fill in the area to be occupied by the L-shaped pier, will provide two berths along its 1,090 ft frontage and a third berth on its 750 ft south side.

• **Other contracts**—The other two contract awards were made in connection with the $5 million Pier 10 in the Atlantic Basin Area. They include a $598,600 contract awarded to J. Rich Steer, Inc., New York, for demolition of the substructure of existing Pier 33. It will be replaced by the new pier. A $45,678 contract was awarded to Commercial Contracting and Equipment Corp., New York, for the removal of Pier 33 shed.

Pier 10, a two-berth facility measur-

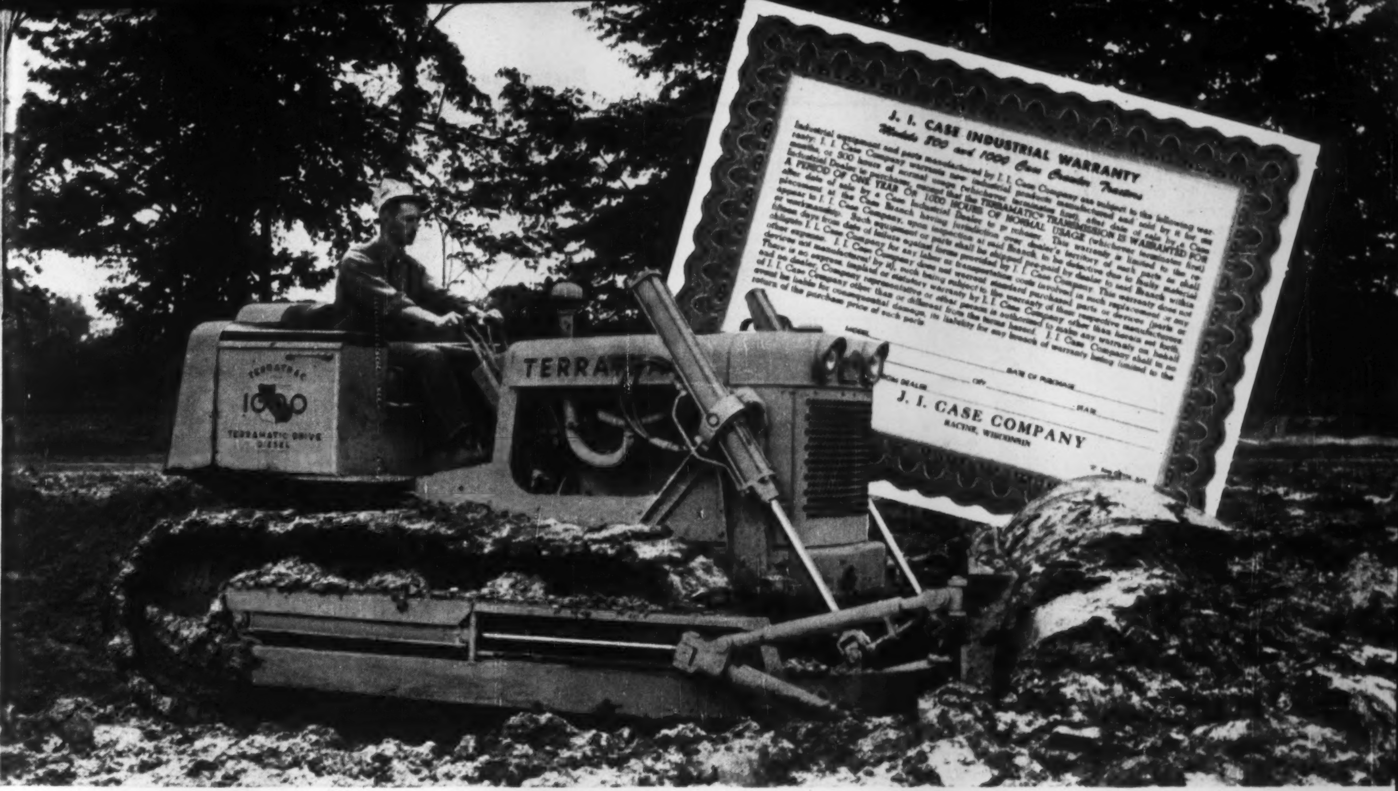
(*B&F continued on page 108*)

Concrete's Uses Keynote of New Building

The new National headquarters building of Medusa Cement Co. in Cleveland Heights was built not only to serve as the company's central office but to demonstrate the wide applications of concrete in construction.

Thin shell concrete roofs, thin curtain wall concrete panels, split rock concrete masonry units, riserless, terrazo stairs and decorative precast concrete panels are a few of the types of concrete construction employed in the building.

Ernest Payer was the architect for the building. Gensert, Williams & Associates were structural engineers and Brown Construction Co. was general contractor. All are from Cleveland.



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Here is really *terrific news* for tractor-users everywhere! Because of the outstanding performance of the new higher-speed 80 and 100 HP Case® TerraTrac® crawler tractors, Case has DOUBLED the warranty on its counter-rotating Terramatic transmission — *from 6 months to a full year* — on all new machines shipped after July 15, 1957. This means that you can now purchase a torque-converter-equipped Model 800 or 1000 Case TerraTrac crawler with the assurance that you are getting the *finest transmission and the most liberal service warranty in the tractor industry today.*

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Best of all, these highly-maneuverable Model 800 and 1000 Case TerraTrac crawlers are available with a full range of advance-design equipment — including high-dump tractor-shovels *up to 2-cu. yd. capacity,* plus heavy-duty dozer blades that tilt or angle *hydraulically* — right from the operator's seat. Get the complete story today direct from your nearest Case Industrial Dealer.

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. . . WITH A SPRAY OR BRUSH

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ing 710 ft long and 325 ft wide, will contain about 180,000 sq ft of covered space and about 97,000 sq ft of paved upland area. Work is scheduled to start September 1 with completion scheduled for spring of 1958.

Under the Brooklyn-Port Authority plan, 25 of the 26 existing obsolete piers, from 36 to 65 years old will be replaced with 10 single-story, steel and concrete structures fully fire resistant and fire protected.

Construction Markets

Louisville: An On-the-Spot Report

There's no construction boom on the immediate horizon for the Louisville, Ky., area.

No new major projects are in sight, the housing market is uncertain because of the tight money situation and the best construction weather of the year is past.

However, most local industry observers expect a slight pickup in the next few months. They agree that the volume of construction has been down in Louisville this summer.

Contractors are bidding a variety of small jobs to keep their organizations intact. They are competing for construction of stores, churches and some small commercial buildings.

There will be more highway work as the State of Kentucky gets its plans ready. Largest of these projects in Louisville is completion of the Henry Watterson Expressway. Contracts are due to be let this fall for this work, including two cloverleafs and a grade separation with an estimated cost of $4 million.

The Metropolitan Sewer District is planning some work including a $125 million interceptor sewer to serve the new sewage treatment plant under construction.

In the housing market, builders seem somewhat less optimistic than they were when the new Federal Housing Administration downpayment schedules were announced, and a 2% limit was set for discounts on FHA-insured loans in Kentucky.

When the news first was announced builders and mortgage bankers were predicting a housing boom for Louisville.

"This is wonderful news," a spokesman for the homebuilders said. "Homebuilding in Louisville thus far in 1957 is down 50% from last year's pace. Now, building will start in earnest.

"Without a doubt, unless we have bad weather this fall, our building in 1957 will now come close to the 1956 level. Many couples who could not meet the downpayment requirements before will be able to do so now."

But, the Louisville bankers have thrown some cold water on this early exuberance. The prospect of getting money at the bank for FHA loans at the current interest and discount rate doesn't look particularly good.

"Since we've started to examine the situation a little more, it doesn't look as rosy," one banker told ENR. "Lenders still can find better yields elsewhere. Besides, it appears that the action came too late in the season to do much good, however, things still are uncertain and it is difficult to tell exactly what will happen."

One public official who keeps in close touch with the housing market said the economics of Louisville rule out any boom in homebuilding.

He noted that the market created by the construction of the General Electric Company's Appliance Park and the expansion of Ford Motor Company's assembly plant has been absorbed. And, Louisville hasn't been snagging any new industries to attract more workers.

Lack of sewers has discouraged some industries from locating in the area outside the city, this official feels. The same problem has affected commercial building. Despite this, at least one group of landowners plans to subdivide an area for industrial use—hoping to attract new companies.

Neither Louisville itself nor Jefferson County has any large public projects planned for the next few months.

Building trades union officials do not seem concerned about lack of jobs for their men. They say there's enough work already under way to keep the crafts busy for the next few months.

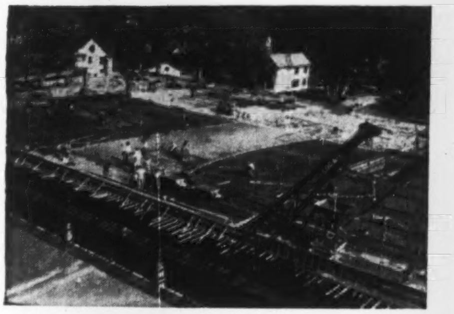
Largest of the projects under way is a $28 million housing development at Fort Knox, started last March. It will take about two years to complete.

General feeling is that construction in Louisville will "get by" for the next few months, with prospects brighter for the long term.

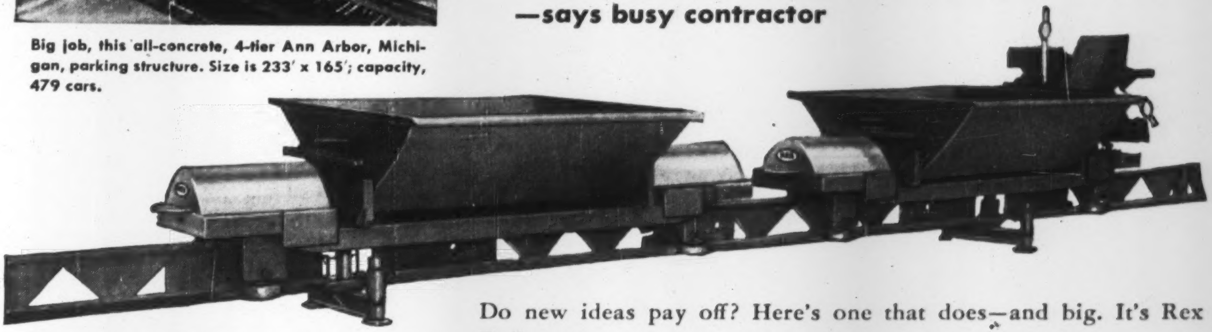
REX RAIL PORTER

"Best way to do this big 4-story job...and save most"

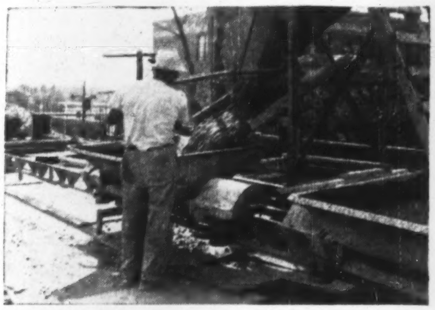
—says busy contractor



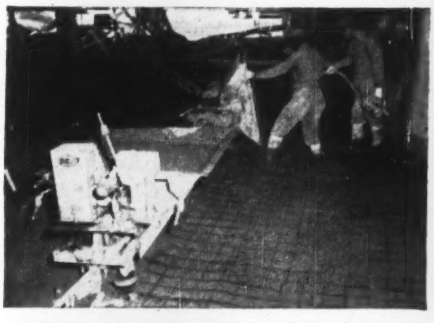
Big job, this all-concrete, 4-tier Ann Arbor, Michigan, parking structure. Size is 233' x 165'; capacity, 479 cars.



This is Railporter. Capacity is 1400 lb., 14.6 cu. ft. Non-powered trailer unit doubles capacity.



Railporter loads at hopper. Touch of control sends it swiftly on its way to pour site—alone!



Quick dumping (either side), then Railporter scoots back fast for another load. Note rail pattern. Goes where you want it.

Do new ideas pay off? Here's one that does—and big. It's Rex Railporter.

Contractor Jeffress Dyer, Inc., saw its advantages in the building of a new 4-tier parking station for the University of Michigan—then went on to profit these many ways:

- Railporter poured an average of 150 yards daily
- Top pour was 160 yards in 6 hours
- Released 12 men for other important work on the job
- Cut completion time, saving a considerable amount of money
- Poured a total of 5000 cubic yards on the 4 stories and ramps

These are the time and money saving advantages you get with Railporter. Here's why. It's the really modern way of moving concrete and construction materials. It's tops for speed and simplicity. Imagine a versatile self-propelled unit that runs on a single rail—entirely unattended. It travels straight lines, curves, restricted headroom areas—stops automatically, dumps fast. One control for forward or reverse.

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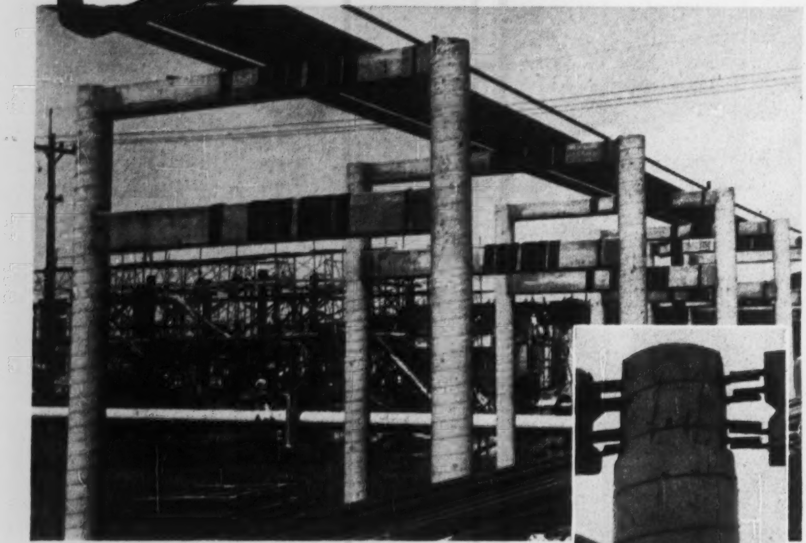

Pipe supports for chemical plant.

Photo shows method of beam tie-in.

Concrete beam tie-in simplified . . . round concrete columns erected with

Sonoco SONOTUBE® Fibre Forms

Pipe supports for a chemical plant consist of an integrated reinforced concrete beam and column structure.

Sonoco Sonotube Fibre Forms were used to erect the round concrete columns. Prior to pouring, openings cut into the fibre forms were blocked with wood carrying reinforcing steel "dowels" through the diameter of the form.

After the pour and necessary curing time, the forms were stripped and the steel dowels were welded to the reinforcing steel of the concrete beams. A simple box form was then used to grout the beam tie-in.

Versatile, low-cost Sonoco Sonotube Fibre Forms save time, money and labor in the construction of underpinning, piers, piles and supporting columns.

In sizes from 2" to 48" I.D., up to 48' long. Order in specified lengths or saw to requirements on the job.

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Oklahoma Pike to Finish With Surplus of Funds

The Oklahoma Turnpike Authority, which opened its 88½ mile superhighway June 28, will wind up its construction with a $10 million surplus, according to H. E Bailey, supervising engineer.

The surplus comes about partially because the original $68 million bond issue for the road (from Tulsa to the Missouri State line at Joplin) included a $6.5 million fund for contingency reserve. Bankers had insisted on a contingency fund after the Turnpike Authority was forced to go back for additional money to complete its Turner Turnpike between Oklahoma City and Tulsa—opened four years ago.

However, it has not been necessary to spend any of the contingency fund, and in addition, construction costs have run somewhat under engineer's estimates. Preliminary estimates indicate that the predicted construction cost of $50.2 million may be reduced by about $1.3 million.

Although the new turnpike was opened officially in June, final contracts will not be completed until about September 1.

Michigan Loses New Plant; Steel Firm Blames Taxes

Jones & Laughlin Steel Corp. dropped construction plans for a $16 million plant at Monroe, Mich. because it claims state taxes are too high. Instead, the facility will be built at Louisville, Ohio.

J&L officials said their decision was based on state tax comparisons and the possible future course of taxation in both states. They estimated their savings in Ohio at $70,000 on initial operation.

That state's business franchise tax is $5,000 as compared to Michigan's $37,000 franchise tax, plus a $38,000 business activities tax.

J&L took an option in February on a 160 acre tract in Monroe. The city hoped to beat Toledo, another contender for the operation, because its water rates could have saved the company $100,000 annually.

Philadelphia to Ask Voters For $47 Million in Bonds

Philadelphia plans expenditures of $47 million for capital improvements and improved subway facilities if the city's voters give their approval in November's elections.

Of the total, $27 million will go for capital improvements; the remaining $20 million would be used to purchase new high speed—and possibly air conditioned—subway cars.

The capital improvements program will include construction of new police and fire stations and airport and port improvements having an estimated cost of $16 million.

Improvement and expansion of the water and sewage systems will cost $11 million.

If approved, the bonds could be sold up to two years after authorization.

The city government just now is preparing to borrow $25 million to $30 million authorized by the voters in 1955. A city official said that the city's cash position is "pretty good" but the bond market is "pretty terrible."

Temporarily abandoned are plans to get voters' approval of an $11 million bond issue for a new stadium in south Philadelphia.

Houston Plans One Bond Issue; Cancels Another

Houston will sell $10 million in revenue bonds in September to finance improvement of the city's water distribution system.

But almost simultaneously with the bond sale announcement, the Houston Port Commission reported that its plans to market $5 million in revenue bonds for port development were shelved. High interest rates were cited as the reason for the postponement. The entire program now will be delayed indefinitely.

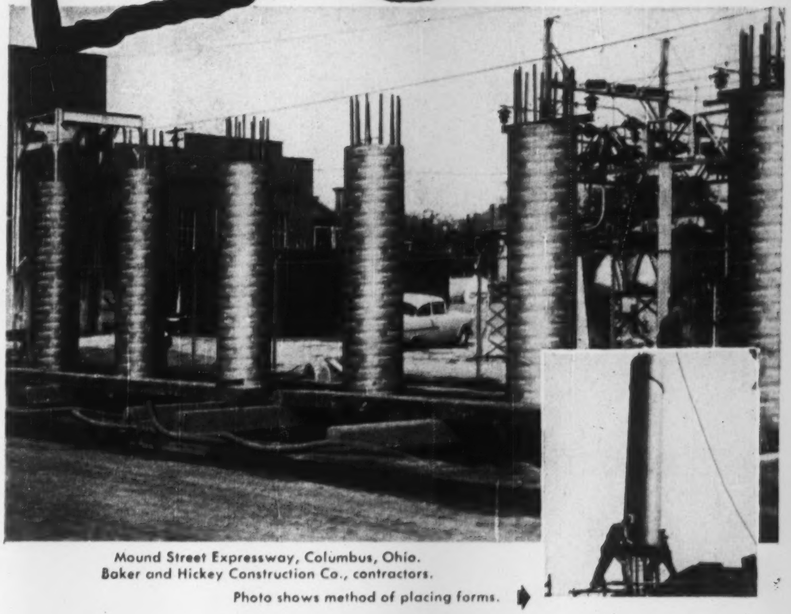
The water distribution improvement program will include extension of mains into areas not now served by the system, additional water storage capacity and construction of a new aqueduct across the city's southern section from the river water purification plant.

An engineering report by Freese, Nichols & Turner, consulting engineers, issued in conjunction with the bond sale announcement, estimated that a long-range water improvement program for Houston would cost about $39 million.

Business Briefs . . .

- **Record bond issue authorized**—A measure authorizing a $22 million state highway bond issue has been passed by the Delaware legislature. The issue would be the largest single highway bond issue in the state's history.
- **Study cost**—Methods of cutting construction costs for housing in the low and middle-income groups are being studied by the New York State Housing Commission and six architectural schools. The study is expected to be completed in about a year.

Reinforced round concrete piers support elevated expressway!



Mound Street Expressway, Columbus, Ohio.
Baker and Hickey Construction Co., contractors.
Photo shows method of placing forms.

Low cost, easy-to-handle

SONOCO SONOTUBE® Fibre Forms

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Sonoco SONOTUBE Fibre Forms, 36" I.D., were used to form the piers for this elevated expressway.

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Low-cost Sonoco SONOTUBE Fibre Forms require minimum bracing, handle easily and strip quickly . . . and the resulting concrete column needs little finishing.

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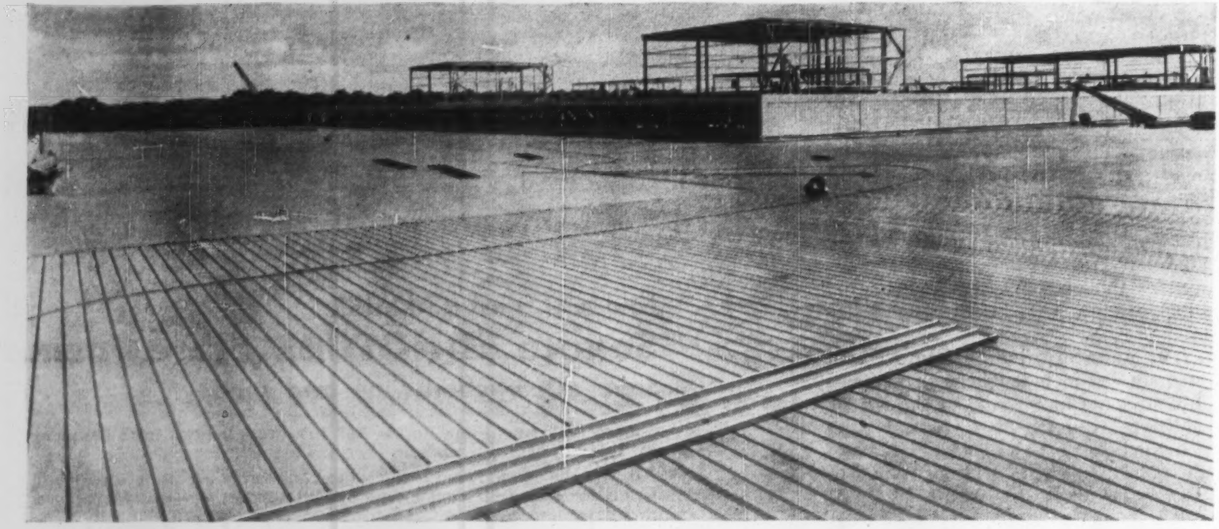

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Joint Board Seeks Autonomy

Files brief asking NLRB to enforce Joint Board rulings on job assignments without reviewing its decisions

Should jurisdictional disputes between building trades over work assignments be settled within the construction industry without judicial review of any kind?

What amounts to an affirmative answer has come from the industry's National Joint Board for the Settlement of Jurisdictional Disputes in a brief filed with the National Labor Relations Board in a case that stems from a long-standing and bitter feud between lathers and carpenters over installation of acoustical ceilings.

The Joint Board, which considers its future at stake in the present case, has taken this position:

- Jurisdictional disputes are best settled through the process of self-government within the construction industry, which has the know-how for making proper work assignments. This is what Congress intended when it framed the Taft-Hartley Act.
- If all parties to a dispute, including contractors and construction workers, are subject to the Joint Board procedure, the NLRB has no authority under the Lee case to consider the dispute on its merits or to review the board's decision, even if the board is unable to get the parties to abide by its decision. The NLRB has the power, without issuing a job decision of its own, to force compliance with Joint Board decisions by holding a union that strikes against the Joint Board guilty of an unfair labor practice and by issuing a cease and desist order.
- If all the disputing parties are not subject to the Joint Board, the NLRB should determine the dispute. But instead of following the Los Angeles Building Trades doctrine that gives contractors an absolute right to make job assignments, the NLRB should make a job award in accordance with Joint Board precedents, after giving the board chairman a chance to testify as an expert witness.

Established under a 1948 agreement between AFL building trades unions and general and specialty contractors, the Joint Board consists of four building trades members (two each from the basic and specialty trades), four contractor members (two each from general and specialty contractors), and an impartial chairman. Participating members are required to submit job disputes to the Joint Board and to refrain from striking. Decisions are rendered in favor of crafts, not unions. Typical of the types of disputes that may arise—and one that underscores the mutual interest of contractors and labor in the outcome—is the question of whether installation of metal windows should be assigned to iron workers or to carpenters.

The Joint Board's massive 67 page brief is part of a recent three-pronged effort to preserve the board's present independence. John Dunlop, outgoing chairman of the board, last month gave contractors and unions a 10 year review of the board's progress and asserted that the board is "the established agency" for handling jurisdictional disputes. And two weeks ago, the AFL-CIO Building and Construction Trades Department put in its new constitution provisions designed to strengthen the Joint Board.

• Issue—What the Joint Board is trying desperately to avoid is an authoritative NLRB or court decision that allows a disputing party aggrieved by a Joint Board ruling to go into another forum and get the decision changed. This, the Joint Board argues, would defeat Congress' intent to encourage the process of private settlements, would invite noncompliance with decisions, might entice contractors to disassociate themselves from the board, and would undermine and destroy the efficacy of the Joint Board.

The issue now before the NLRB is whether the NLRB can find a union that strikes in defiance of a Joint Board ruling guilty of an unfair labor practice without first determining whether the Joint Board ruling is correct.

The law [Sec. 8(b)(4)(d)] declares it an unfair labor practice for a union to strike to force a contractor to give it a particular work assignment. If an unfair labor practice charge is filed against the striking union, the NLRB is required [Sec. 10(k)] to "hear and determine" the dispute. If the disputing parties have previously agreed to a voluntary method for settling work disputes—such as the Joint Board—the NLRB is not required to hold a hearing, but it cannot dismiss the charge unless the dispute is actually settled or unless the NLRB makes a final determination of its own. If the language of the law is followed to its logical conclusion, the Joint Board says, the NLRB can keep the charge alive, file a complaint, and issue a cease and desist order against the striking union without investigating the dispute any further than is necessary to determine that the parties are subject to the Joint Board.

The NLRB regulations, however, require the dismissal of an unfair labor practice charge if the parties come within the Joint Board procedure. Net result—and this is what happened in the lathers case—the Joint Board can get no support from the NLRB in enforcing its decisions, and unions are encouraged to defy Joint Board rulings.

• Argument—In the present NLRB case, which arose in Cleveland, a complaint had been filed against the lathers who refused to comply with a Joint Board ruling in favor of carpenters. The trial examiner has asked that the complaint be dismissed under the regulations because all parties are subject to the Joint Board.

The Joint Board is asking (1) that the law be construed to mean that the NLRB, without considering the dispute on its merits, can proceed with the unfair labor practice charge and issue a cease and desist order, and (2) that the regulation requiring dismissal of the charge be set aside as inconsistent with the law.

Gist of the Joint Board argument is that the board represents a voluntary method for settling disputes and that Congress, in an effort to encourage such methods, intended to make machinery like the Joint Board an exclusive remedy. Where such machinery exists, the board contends, the role of the NLRB is reduced to that of enforcing the voluntary tribunal's decisions, the latter being necessary because there is no sure-fire way of obtaining enforcement in the courts.

• Questions—Recent developments, however, have posed two questions not authoritatively disposed of by the Joint Board, but which further complicate the issue.

Under the new building trades' constitution, the Joint Board procedure is made "final and binding" on all the AFL-CIO building trades unions. Juris-

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dictional picket lines are outlawed. And all local unions are required to put in labor contracts, with contractors who subscribe to the Joint Board plan, a standard clause making the Joint Board procedure compulsory, final, binding and conclusive on both the union and the contractor. When the constitution was adopted, the lathers were told, in effect, that Joint Board rulings inconsistent with precedent are void.

Thus, the two questions are these:

1. Since adherence to Joint Board procedure is now compulsory for all the building trades, is it the "voluntary" process Congress contemplated even though, under legal double-talk, unions that don't want to comply can secede from the Building Trades Department?

2. If the NLRB refuses to consider jurisdictional disputes on their merits, how can a union that claims decisions are contrary to precedent get them legally reviewed?

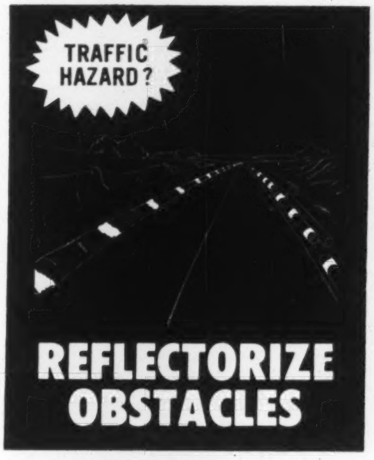
The Joint Board and Mr. Dunlop have both suggested two outs: First, the Joint Board has made tremendous progress in cutting down the number and seriousness of disputes and has won public confidence and prestige; the law should be liberally construed to assure its continued effectiveness. Secondly, if the NLRB should hold its own hearings on disputes, it should follow Joint Board practice and precedent by using the board chairman as an expert witness; this would assure a uniform body of law on work assignments and would prevent the NLRB from upsetting Joint Board rulings.

• **Suggestions**—In presenting their cases, the Joint Board and Mr. Dunlop have come up with a number of suggestions for improving what they call the board's "satisfactory" record. Among them are these:

- Greater effort to obtain from contractors written proof of adherence to the Joint Board procedure.
- Wider use of Joint Board clauses in labor contracts.
- Greater acceptance of jurisdictional settlements through national agreements between national unions.
- Revision of the "Green Book" (a compilation of agreements and decisions) to bring it up to date and to make it more useful.

The suggestion also has been made that wider use of Joint Board clauses in subcontracts would strengthen the "voluntary" method of settlement.

Underscoring the significance of the NLRB's forthcoming decision in the lathers case, the Joint Board asks the NLRB not to dismiss the complaint against the lathers "without clarifying the meaning" of the law.



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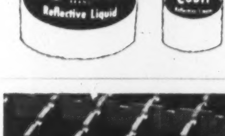

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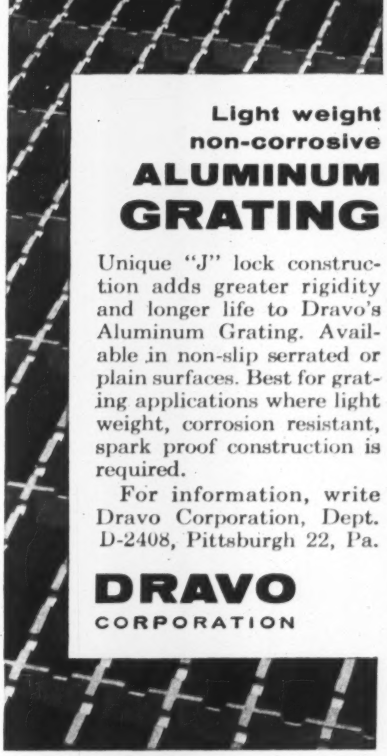

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Labor Defers Action

No commitments made by AFL-CIO on teamsters, Hutcheson, jurisdiction

No conclusions were reached last week at the mid-summer meeting of the AFL-CIO Executive Council in Chicago on three problems that are tied into the construction industry: the jurisdictional conflict between craft and industrial unions; alleged corruption within the teamsters union; and the use of the Fifth Amendment by Carpenters' President Maurice Hutcheson in testimony before the Senate Roads Committee last June.

Because of the inability of Plumbers' President Peter Schoemann to attend an immediate meeting of the Executive Council's special subcommittee on the jurisdictional problem, a meeting of the committee was postponed and is tentatively scheduled to be held this week.

Purpose of the meeting is reconsideration of a proposed plan for handling jurisdictional disputes, with particular emphasis on a redefinition of the types of construction work conceded to belong to the building trades (ENR Aug. 15, p. 179).

Action on the teamsters union, a Building Trades Department affiliate that faces ouster from the AFL-CIO unless it meets the federation's ethical practices standards, was primarily limited to scheduling another hearing before the Ethical Practices Committee on Sept. 5.

It is expected that the AFL-CIO will eventually issue an ultimatum to the teamsters as a guide to its September 30 convention action. So far, top AFL-CIO officials have refused to comment on the candidacy of James Hoffa for the teamster presidency. The Senate Select Committee is currently attempting to associate Mr. Hoffa with labor racketeering in New York City.

Official action was deferred on Mr. Hutcheson's use of the Fifth Amendment. It is the declared policy of the AFL-CIO that those who invoke the Fifth Amendment for their own protection have no right to hold union office. Mr. Hutcheson is an officer of the AFL-CIO, and, like Dave Beck, is a vice president of the Building and Construction Trades Department. After postponing Mr. Hutcheson's case, AFL-CIO President George Meany said that "certain things are developing in the case and we want more information on it. The fact that no union funds were involved draws a distinct line between this case and the Beck case."

OFFICIAL PROPOSALS

Bids: September 3, 1957.

Power Authority of the State of New York

Advertisement for Proposals for the Construction of the 115 KV Transmission Lines for Reynolds Power Supply

SPECIFICATION PA-8-20
CONTRACT NO. T7

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the camplete installation of the 115 kv transmission lines for the Reynolds Power Supply until 10:30 A.M. Eastern Daylight Saving Time on the 3rd day of September, 1957, at the Authority's office, 18th floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are estimated:

60 wood pole structures of various types—poles, crossarms, and braces furnished by the Authority.

1,100,000 pounds steel tower structures—structural steel and accessories furnished by the Authority.

10 miles of stringing cable—cable furnished by the Authority.

The length of the project is 4 miles.

The work shall be completed on or before September 1, 1958.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) dollars for initial set and Five ($5.00) dollars for each additional set, no part of which will be refunded.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: September 3, 1957.

Contract EP-502.202

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
ELIZABETH-PORT AUTHORITY PIERS
BORINGS

Sealed proposals for making water and land borings and taking samples for the Elizabeth-Port Authority Piers to be constructed at Elizabeth, N. J. will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, September 3, 1957 at which time said proposals will be opened and read in Room 1108.

Contract Documents may be seen at the office of the Engineer of Design of the Authority, Room 1115, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, August 22, 1957.

NOTICE TO ADVERTISERS

Because of the Labor Day Holiday
The September 5th issue will close for press on August 29th

OFFICIAL PROPOSALS

RATE: **The rate for Official Proposal advertising is $2.10 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.**

CLOSING DATE: **Friday 10:30 A.M. for issue dated the following Thursday.**

SEND COPY TO: **Official Proposal Division,**
Engineering News-Record
P.O. Box 12
New York 36, N. Y.

Bids: August 29, 1957

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Article 2, Title 9 of the Public Authorities Law, and **special provisions for projects financed with Federal Aid Funds,** sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 29th day of August, 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany, N. Y.						
Albany (Rte. 43)	R.C. 57-142	Normanskill Viaduct, S.H. 9109	0.22	Reconstruction of Viaduct Abutments, Pier, Sidewalks Curbs and Expansion Joints	$2,500 Plans $10	$45,000
Albany (Rte. 7)	FARC 57-144 FAC 57-9	Troy-Schenectady, Pt. 4, S.H. 630 City of Watervliet: 19th Street (City Line to Grotto Ct.) Project U-411(4)	2.39	Asphalt Concrete Pavement 2 @ 24′ Var. Wide	80,000 Plans $15	1,225,000
Albany & Saratoga	FISH 57-16	Interstate Route 502 (Mohawk River Bridge & Approaches) (Latham to Clifton Park, Sect. 2, Cont. 2) Project I-1119(7)	0.27 (0.43 Acc.)	9″ Cem. Conc. Pavt. 2 @ 36′ Wide = 0.27 Mi. Asphalt Conc. = 0.43 Mi. 600′ Span Hinged Steel Arch Bridge With Comp. I-Beams Approaches 213.5′	300,000 Plans $25	5,598,000
Saratoga & Washington (Rte. 29)	FARC 57-141	Schuylerville Village: North Broad and Ferry Streets, S.H. 1591 Schuylerville-Greenwich, S.H. 1437 Project F-1135 (1)	0.61	9″ Cem. Conc. Pavt. Var. Wide = 0.59 Mi. Misc. Work = 0.02 Mi. Comp. I-Beam Br. 348′ Cant. Girder & Comp. I-Beam Br. 531′	78,000 Plans $15	1,[illegible],000
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 No. Genesee St., Utica, N. Y.						
FULTON (Rte. 29)	FASS 57-11	Union Mills-South (Co. Rd.) Project S-502(1)	2.26	Graded Gravel, Bit. Double Surf. Treat.	16,000 Plans $15	293,000
Fulton (Rte. 10)	FARC 57-146	Ephratah-Kecks Center, Pt. 2, Project S-472(1) S.H. 620	0.28	Asphalt Concrete Comp. I-Beam Br. 37′	7,000 Plans $10	129,000
DISTRICT No. 3, WILLIAM ROBINSON, District Engineer, 333 E. Washington St., Syracuse, N. Y.						
Onondaga & Oswego (Rte. 11)	FARC 57-150	Cicero-Brewerton, S.H. 5249 Central Square-Union Square, S.H. 5415 Project F-463(12)	10.39	Grading, Drainage and Tree Planting	$14,000 Plans $10	$255,000
Cayuga (Rte. 38A)	FARC 57-152 R.C. 57-158	Auburn-Owasco, S.H. 614 Project F-642(2)	6.05	Asphalt Concrete, Type 1A	8,000 Plans $10	142,000
Seneca (Rte. 89	FARC 57-143 R.C. 57-149	East Varick-Canoga, S.H. 8386 Canoga-Halsey Corners, S.H. 8363 Project F-509(4)	12.53	Asphalt Concrete	32,000 Plans $10	596,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe (Rte. 64)	R.C. 57-151	Pittsford Village: Monroe and South Main Streets, S.H. 5435	....	Cleaning and Painting 1 Bridge	800 Plans $10	15,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, 65 Court St., Buffalo, N. Y.						
Chautauqua (Rte. 60)	FARC 57-106	Sinclairville-Casadaga, Pt. 2, S.H. 1012-1012A Casadaga-Fredonia, S.H. 938 Project F-1117(1)	6.27 (1.83 Acc.)	Asphalt Conc., 6.49 Mi. 9″ Cem. Conc. Pavt. 24′ Wide = 1.24 Mi. Misc. Work = 0.37 Mi. Reinf. Conc. Arch Br. 68′	140,000 Plans $25	2,506,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Rockland	H.T. 57-3	New York State Thruway-Hudson Section-Sub. 8 Access Ramp to Route 59	0.26	9″ Cem. Conc. Pavt. Var. Wide	4,000 Plans $10	69,000
DISTRICT No. 9, J. C. FEDERICK, District Engineer, 71 Frederick St., Binghamton, N. Y.						
Broome & Schoharie	R.C. 57-148	Barker, S.H. 375 Howes Cave-Cobleskill, S.H. 5286	....	Cleaning & Painting 2 Thru Truss Bridges 160′ and 145′	$500 Plans $10	9,000
Sullivan	FESS 57-6	Barryville-Yulan, Co. Rd. 21 Project ER-26(2)	1.86	Asphalt Conc., Opt.	13,000 Plans $15	247,000
DISTRICT No. 10, M. E. GOUL, District Engineer, Little East Neck Road, Babylon, L. I., N. Y.						
Nassau (Rte. 107)	FARC 57-147	Massapequa-Glen Cove, S.H. 9017 Project U-S-377(1)	2.47 (1.29 Acc.)	9″ Cem. Conc. Pavt. 2 @ 37′ Var. Wide = 2.27 Mi. Asph. Conc., = 0.46 Mi. Temp. Asph. Conc. = 0.39 Mi. Misc. Work = 0.64 Mi. Bridge Widening at Northern State Parkway	125,000 Plans $50	2,273,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, **and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.**

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. **Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".**

The right is reserved to reject any or all bids.

JOHN W. JOHNSON

SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: September 4, 1957.

Power Authority of the State of New York Advertisement for Proposals for the Construction of Foundations for Barnhart-Adirondack Transmission Line—North Extension Near Massena St. Lawrence County, New York

SPECIFICATIONS NO. PA-8-103
CONTRACT NO. T8

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of foundations for Barnhart-Adirondack transmission line—north extension, near Massena, St. Lawrence County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 4th day of September, 1957, at the Authority's office, 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The estimated quantities of work are:

Clearing	43 acres
Excavation and backfill, unclassified	52,000 cu. yds.
Furnishing and driving steel piles	10,500 lin. ft.
Concrete	2,000 cu. yds.
Reinforcement bars	360,000 pounds

All work shall be completed on or before December 31, 1957.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents, and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and The Hydro-Electric Power Commission of Ontario, 620 University Ave., Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: September 12, 1957.

Construction of Sewage Treatment Plant

NOTICE TO BIDDERS

Sealed proposals will be received until 11:00 A. M. EST, September 12, 1957, in the office of the City Commission of Fort Lauderdale, Florida for construction of Project No. 629, Sewage Treatment Plant "D".

Bidding blanks may be obtained from the office of the City Engineer. Plans, Specifications, and Contract Documents are on file in the office of the City Engineer.

A deposit of $25.00 for Plans and Specifications, and of $15.00 for each additional set of plans or specifications, will be required. All deposits for plans and specifications will be refunded upon their return in good condition within 10 days of the opening of bids.

A certified check, cashier's check or bank officer's check, for 2% of the total amount of the bid, made payable to City of Fort Lauderdale, Florida, shall accompany each proposal as evidence of good faith and responsibility of the Bidder. This check shall be retained by the payee as liquidated damages should the Bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the Proposal, in the event the Proposal of the Bidder is accepted.

The City Commission reserves the right to reject any or all bids.

William J. Veeder
City Manager

Bids: September 12, 1957

Construction of Water Main

Notice is hereby given that sealed bids will be received in accordance with the law by the Erie County Water Authority until ten o'clock A.M. Daylight Saving Time on the twelfth day of September, 1957 at the office of the Authority, 338 Ellicott Square Building, Buffalo 3, New York, for furnishing materials and performing the labor for constructing a twenty-four (24") inch diameter water main in the City of Buffalo and the Town of Cheektowaga, Erie County, New York, all in accordance with plans and specifications prepared by Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, New York.

Copies of the plans and specifications may be obtained either from the Erie County Water Authority or from the Consulting Engineers upon deposit of Twenty-Five ($25.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within ten (10) days after the date on which bids are received or else the entire deposit will be forfeited.

The work to be done includes all materials and labor, tools, plant and equipment necessary for constructing, installing, testing and completing, ready for operation, approximately four thousand seven hundred and forty (4,740') feet of twenty-four (24") inch diameter water main with connections to existing mains, meter, valves and blow-off facilities, manholes and other accessories and appurtenances.

Each proposal must be accompanied by a certified check payable to the Erie County Water Authority or a bid bond to the favor of the Authority from a reliable surety company authorized to do business in the State of New York and satisfactory to the Authority, in amount equal to ten (10%) percent of the proposal. The certified check will be retained to pay for any damage or loss to the Authority, or the liability bond will accrue, in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Authority reserves the right to consider bids for thirty (30) days after their receipt before awarding any contract and the right is reserved to accept any bid or to reject any or all of them.

ERIE COUNTY WATER AUTHORITY
By: WILLIAM J. CARNEY
Secretary
Buck, Seifert and Jost
Consulting Engineers
Dated: August 16, 1957

Bids: September 10, 1957.

Advertisement for Bids Town of Hempstead, Nassau County, L. I., New York Refuse Disposal Plant Additions and Replacements

Sealed bids for the construction of Additions and Replacements to the Existing Refuse Disposal Plant of the Town of Hempstead Refuse Disposal District will be received by the Town Board, Town Hall, Hempstead, New York, until 10:30, Daylight Savings Time, Tuesday, September 10, 1957, and will be publicly opened and read at a meeting of the Board.

These plans and specifications cover three separate Divisions; Division VIII—General Construction for an Additional Refuse Pit, Scale House, New Crane Trolley, New Traveling Screen, Reconstruction of southwest corner of the West Tipping Room, New Access Roads together with other accessories; Division IX—Furnace Work, which includes replacements and modifications of existing Furnace and Combustion Chambers and Accessories; and Division X—Electrical Work. The work under each Division of the Project will be included in a separate contract.

The information for Bidders, Form of Bid, Form of Contract, Form of Performance Bond, together with the Specifications and Contract Drawings, may be examined at the office of the Town Clerk, Town Hall, Hempstead, New York, or at the office of the Consulting Engineer, Henry W. Taylor, 151 West Merrick Road, Freeport, New York.

All inquiries shall be referred to and copies thereof can be obtained at the office of Henry W. Taylor, 151 West Merrick Road, Freeport, New York upon the deposit of $25 for each set. The full deposit will be returned to any person submitting a bid in accordance herewith and returning one copy of the plans and specifications in good condition within thirty (30) days following the award of contract or the rejection of the bid of such person; a refund of $10.00 will be made for any other sets of plans and specifications returned in good condition and within thirty (30) days after the award of contract or rejection of such plans.

Checks for payment on the plans and specifications shall be made payable to Henry W. Taylor.

Each bidder must deposit with his bid certified check or cash in an amount not less than five per cent (5%) of the amount of his bid. The successful bidder will be required to post a bond in a form satisfactory to the Town Board in the full amount of the contract. Should said successful bidder fail to execute the contract and post the required performance bond within seven (7) days after the award of the contract, the check or cash will be forfeited to the Town of Hempstead. Checks or cash of unsuccessful bidders may be held until the contract award is approved or all bids rejected, after which they will be returned within three (3) days.

The Town Board reserves the right to waive any informalities in any bid and to reject any or all bids.

No bidder may withdraw his bid after acceptance thereof by the Town Board or within thirty (30) days after the actual opening thereof

TOWN OF HEMPSTEAD
BY: NATHAN L. H. BENNETT
Town Clerk
Dated: August 13, 1957.

Bids: October 10, 1957.

Territory of Hawaii Territorial Highway Department Honolulu, T. H.

NOTICE TO BIDDERS

SEALED PROPOSALS for the construction of Nuuanu Pali Road, Outbound Tunnels, Federal Aid Project No. BF 061-1(5), Districts of Honolulu and Koolaupoko, Island of Oahu, Territory of Hawaii, will be received at the office of the Territorial Highway Engineer, Honolulu, T. H., until 2:00 o'clock p.m., Thursday, October 10, 1957, at which time and place they will be publicly opened and read. The right is reserved to reject any and all proposals and to accept the one best suited to the interests of the Territory.

The principal items of work involved in the construction of two reinforced concrete lined vehicular tunnels of 1,080 lin. ft. and 496.5 lin. ft. respectively, and grading and paving of 0.414 mile of roadway include:

47,000 Cubic yards	Roadway Excavation
13,450 Cubic yards	Class A-1 Concrete in Tunnels
833,000 Pounds	Bar Reinforcing Steel in Tunnels
47,000 Cubic yards	Tunnel Excavation
1,047,300 Pounds	Structural Steel Ribs

Copies of plans, specifications, special provisions, and subsurface investigation reports are on file and open to public inspection as of August 8, 1957, at the office of the Territorial Highway Engineer, Territorial Office Building, Honolulu, T. H.; and also on or after August 19, 1957 at the following offices:

Regional Engineer
Region 7, Bureau of Public Roads
Old Mint Building
5th & Mission Streets
San Francisco, California
Associated General Contractors of America
(Central California Chapter)
850 Battery Street
San Francisco 11, California
Associated General Contractors of America
(Southern California Chapter)
2551 Beverly Blvd.
Los Angeles 57, California

Plans, specifications and blank forms of proposal will be available for mailing from the Territorial Highway Department to prospective bidders upon the deposit of Seventy Five Dollars ($75.00) plus air mail charges (approximately $7.50). Copies of subsurface investigation reports may be purchased from the Territorial Highway Department for the sum of Forty Dollars ($40.00) for each set. Deposit of Seventy Five Dollars ($75.00) will be refunded when plans are returned.

Remittances are payable by certified check or postal money order to the Territorial Highway Engineer and must accompany requests for plans, specifications and contract documents.

Each prospective bidder must file a "Standard Questionnaire and Financial Statement for Bidders" on the amended forms provided by the Territorial Highway Department at least thirty (30) days prior to the time advertised for the opening of bids.

After the questionnaire has been reviewed and checked, the prospective bidder will be notified as to whether or not he is prequalified to submit a bid.

W. M. WACHTER
Territorial Highway Engineer

OFFICIAL PROPOSALS

Bids: October 1, 1957.

Power Authority of the State of New York
Niagara Power Project
Advertisement for Proposals

FOR
THE FURNISHING AND DELIVERY
OF
28,000 HP HYDRAULIC PUMP/TURBINES
FOR
TUSCARORA PUMP/POWER PLANT
SPECIFICATIONS NO. PA-N-24001
NIAGARA CONTRACT NO. NP1

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the design, manufacture, and furnishing of 28,000 HP hydraulic pump/turbines performing as turbines and discharging 3400 cubic feet per second performing as pumps and delivery thereof f.o.b. Model City, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 1st day of October, 1957 at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y., at which time and place proposals will be publicly opened and read aloud.

Bids will be entertained for 6 or 12 pump/turbines and associated equipment and services in accordance with the bidding schedules. Erection at the site of installation will be done by others but services of erection engineers and mechanics shall be provided by the manufacturer if and when required.

Bids will not be restricted to American manufacturers.

Plans, Specifications and Proposal Forms for the work, which will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Mass., may be inspected by prospective bidders during office hours and may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y., upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents, and Five ($5.00) dollars per set for additional sets, no part of which will be refunded.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the maximum price bid for any bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: September 17, 1957.

Contract NYA-930.003

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
EXPANSION OF FUEL STORAGE
SYSTEM

Sealed proposals for the furnishing and installation of four tanks for the expansion of the bulk fuel storage system at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, September 17, 1957 at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, August 22, 1957.

OFFICIAL PROPOSALS

Bids: September 24, 1957.

Sewage Treatment Project of the Monaca Borough Municipal Authority
Beaver County, Pennsylvania

Sealed proposals will be received at the office of the Secretary of the Monaca Borough Municipal Authority, Municipal Building, Monaca, Pennsylvania until 7:30 P.M., E.D.S.T. September 24, 1957, and will be publicly opened and read shortly thereafter in the Council Chambers in the Municipal Building, for furnishing all necessary labor, material and equipment and performing all work for the construction noted below.

Proposals will be received upon five (5) separate parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certified check payable to the Monaca Borough Municipal Authority or a bid bond in an amount not less than ten (10) per cent of the total bid in accordance with the provisions of the Contract Documents.

Copies of the Contract Documents including the Drawings and Specifications will be on file for inspection purposes at the offices of Gannett Fleming Corddry and Carpenter, Inc., 5823 Penn Avenue, Pittsburgh 6, Pennsylvania, and 600 North Second Street, Harrisburg, Pennsylvania, and also at the office of the Secretary of Monaca Borough in the Municipal Building, Monaca, Pennsylvania.

Copies of the Contract Documents, including Drawings and Specifications, not to exceed two (2) sets of any particular Contract to a prospective bidder, may be obtained only from the office of Gannett Fleming Corddry and Carpenter, Inc., that is located at 5823 Penn Ave., Pittsburgh, Pa. (P. O. Box 5073, Pittsburgh 6, Pa.), upon deposit of the following stated amounts for each set:

Contract One CONSTRUCTION OF INTERCEPTOR AND OUTFALL SEWER	$25.00
Contract Two GENERAL CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$25.00
Contract Three PLUMBING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$25.00
Contract Four HEATING WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$25.00
Contract Five ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF A SEWAGE TREATMENT PLANT	$25.00

Full refund will be made only to actual bidders on the five (5) contracts noted above, for return of one (1), no more, of each set in good condition within ten (10) calendar days after closing date for receipt of bids; refund for return of all other sets, in good condition, within the same period, will be fifty (50) per cent of the deposit.

Gannett Fleming Corddry and Carpenter,
Inc., Engineers
5823 Penn Avenue
Post Office Box 5073
Pittsburgh 6, Pennsylvania

MONACA BOROUGH MUNICIPAL
AUTHORITY
Municipal Building
Monaca, Pennsylvania

Bids: October 24, 1957

Construction of Lewiston Power Plant
Lewiston, Niagara County, N. Y.

POWER AUTHORITY OF THE
STATE OF NEW YORK
ADVERTISEMENT FOR PROPOSALS
FOR
SPECIFICATIONS NO. PA-N 23003
NIAGARA CONTRACT NO. N3

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of Lewiston Power Plant and appurtenant works, located in Lewiston, Niagara County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 24th day of October 1957, at the Authority's Office, 18th floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are:
Estimated:

1,385,000	cu. yds.	Earth excavation
12,788,000	cu. yds.	Rock excavation all classifications
177,000	lin. ft.	Drill holes for exploration and grouting
1,050,000	cu. yds.	Concrete
30,000	tons	Reinforcing steel
350	tons	Miscellaneous metalwork
2,500	tons	Erection of structural steel
6,500	tons	Erection of gates, trash racks, stop logs, hatch covers and cranes
7,800	tons	Erection of turbines
2,600	tons	Handling of spiral casings
22,000	tons	Handling of generator parts and electrical equipment

The work shall be completed on or before December 31, 1961.

Plans, Specifications and Proposal Forms for the work, may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Fifty ($50,00) dollars per initial set of contract documents, and Twenty-Five ($25.00) dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Mass., and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the gross sum price bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: September 4, 1957.

The Hydro-Electric Power Commission of Ontario

ST. LAWRENCE POWER PROJECT
CONSTRUCTION OF GRADE
SEPARATION
CANADIAN NATIONAL RAILWAYS
RELOCATION AT MILEAGE 75.75 AND
MOULINETTE ROAD (LONG SAULT)

SEALED TENDERS, in quadruplicate, addressed to the undersigned, 620 University Avenue, Toronto 2, Ontario, and clearly marked

"TENDER FOR ST. LAWRENCE POWER
PROJECT
CONSTRUCTION OF GRADE
SEPARATION
CANADIAN NATIONAL RAILWAYS
RELOCATION AT MILEAGE 75.75 AND
MOULINETTE ROAD (LONG SAULT)"

will be received up to 4:30 o'clock p.m., Eastern Daylight Saving Time, on

WEDNESDAY, SEPTEMBER 4, 1957.

The work consists of clearing, grubbing, excavation and compaction of materials, pile driving, construction of concrete piers, abutments and wing walls, construction of concrete deck slabs, curbs, sidewalks, installation of handrail, laying of asphalt surface, completion of approaches and such other incidental work as outlined in the Commission's tendering documents C-512-57. This work shall commence within fifteen (15) calendar days after the date of receipt of notice to proceed and shall be completed by October 31, 1958.

Copies of the tendering documents may be obtained on or after Thursday, August 15, 1957, at the office of the Director of Supply, 620 University Avenue, Toronto 2, Ontario, on payment of twenty-five dollars ($25.00) for each set. This charge will not be refunded.

Tendering documents may be inspected at the above address and at the offices of the following: the Commission's Field Office, Cornwall, Ontario; Power Authority of the State of New York, Coliseum Tower, 10 Columbus Circle, New York 19, New York; and Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts.

Each tender must be accompanied by a certified cheque drawn upon a Canadian chartered bank payable to the order of The Hydro-Electric Power Commission of Ontario in the amount of 10 per cent of the total amount of the tender. Provision for the return of the cheques appears in the tendering documents.

The successful tenderer may be required to furnish a performance bond in the form approved by the Commission and issued by a bonding company licensed as such in the Province of Ontario and acceptable to the Commission for 100 per cent of the total amount of the contract.

The lowest or any tender will not necessarily be accepted.

E. B. EASSON
SECRETARY

U. S. Government

GOVT. OF DIST. OF COL., DEPT. OF SAN'Y. ENG'G., Aug. 1, 1957. SEALED PROPOSALS will be recd. in Rm. 404, 499 Pa. Ave., N. W., Wash. 1, D. C., until 2 PM, EDT, Sept. 12, 1957, and then publicly opened and read for constr. of 25 M.G. LOW SERVICE RESERVOIR in Brentwood Park vic. New York Ave. & 9th St., N.E., consist. of 25 million gal. capacity Low Reservoir Service. Proposal forms, plans and specns. obtainable from Supervisor, Contr. & Bond Section, Procurement Office, D. C., Rm. 406, 499 Penn. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to Collector of Taxes, D. C. (Tel. NA 8-6000, Ext. 2378).

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4953) will be received at Albuquerque, New Mexico, until September 11, 1957, for furnishing labor and materials for Earthwork, Clearing and Structures for Irrigation Rehabilitation, Belen Unit 6, Middle Rio Grande Project, New Mexico. Location near Albuquerque, New Mexico. Principal items are clearing, cleaning and constructing embankments for about 10.4 miles of waterway; 240 cu. yds. of concrete; furnishing and installing 64 metal slide gates; and other work. Completion time March 15, 1958. For particulars, address Bureau of Reclamation, Post Office Box 252, Albuquerque, New Mexico; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4954) will be received at Albuquerque, New Mexico until September 19, 1957, for furnishing labor and materials for Channelization of the Rio Grande, Socorro area, Middle Rio Grande Project, New Mexico. Location near Socorro, New Mexico. Principal items are 174,300 cu. yds. excavation; 16,000 cu. yds. pit-run gravel blanket and surfacing; 515 cu. yds. concrete; 683 lin. ft. metal liner plate culverts; and other work. Completion time 250 days. For particulars, address Bureau of Reclamation, P. O. Box 252, Albuquerque, New Mexico; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4956) will be received at Oak View, California, until September 17, 1957, for furnishing labor and materials for Earthwork, Structures and Concrete or Steel Pipe Lines and Access Roads, Ventura River Project, California. Location near Ventura, California. Principal items are 356,000 cu. yds. excavation; 4.8 miles concrete pipe; 27 miles of pretensioned concrete or steel pipe (alternate pipe); and other work. Completion time 500 days. For particulars, address Bureau of Reclamation, P. O. Box 97, Oak View, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: September 10, 1957.

Contract TA-280.001

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
TETERBORO AIRPORT
PIPE DRAINS AND RELOCATION OF DITCHES

Sealed proposals for furnishing and installing pipe drains and relocating ditches at Teterboro Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, Sept. 10, 1957 at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, August 22, 1957.

OFFICIAL PROPOSALS

Bids: September 10, 1957.

Contract PN-250.011

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
TIDEWATER AREA
WATER MAIN

Sealed proposals for the furnishing and installation of a watermain on the north side of the City Channel at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, September 10, 1957, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, August 22, 1957.

Bids: September 10, 1957

Contract No. R-9

Proposals are invited for Contract No. R-9, which involves the surface treatment of shoulders; the construction of Penetration Macadam shoulder surfaces; repairs to shoulders; the construction and reconstruction of median cross-overs; the construction of an additional toll lane No. 10 at Interchange #1 and other incidental work in connection therewith, all on the New Jersey Turnpike from the approach to the Delaware Memorial Bridge, in New Jersey, to mile 38, in Salem, Gloucester, Camden and Burlington Counties in New Jersey.

The principal items of work include:

Single Bituminous Surface Treatment 881,000 sq. yds.
Plant-Mixed Macadam 3" Thick 30,000 sq. yds.
Cold-Mix Bituminous Concrete 800 tons
Asphaltic Concrete Pavement 1½" Thick 19,000 sq. yds.
Combination Drain 24" Diameter 960 lin. ft.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock Daylight Saving Time on the morning of September 10, 1957, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement on the form furnished by the Authority.

Contract documents may be examined during office hours on or after August 20, 1957, at the office of the Authority and at the office of the Consulting Engineers, DeLeuw, Cather and Brill, 202 East 44th Street, New York 17, New York. Contract documents will be furnished upon payment of ten dollars ($10.00) for each set, upon application to the Authority.

Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman
August 15, 1957

OFFICIAL PROPOSALS

Bids: August 29, 1957

Soil Exploration and Foundation Investigation

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time, on August 29, 1957, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATION AT VARIOUS SITES ON CROSS BRONX EXPRESSWAY, INTERSTATE ROUTE 511, PROJECT 1-1084(28), MAJOR DEEGAN EXPRESSWAY INTERCHANGE, INCLUDING BRIDGE OVER HARLEM RIVER, BRONX COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. FA-SM-106;

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York
(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, New York
(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $29,700.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,500.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

J. W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

Bids: September 12, 1957.

Furnishing Items of Water Treatment Plant Equipment

NOTICE TO BIDDERS

Sealed proposals will be received until 11:00 A. M. EST, September 12, 1957, in the office of the City Commission of Fort Lauderdale, Florida for Project 630-A, furnishing items of water treatment plant equipment for the Fiveash Water Treatment Plant consisting of one Solids Contact Softener Mechanism and two Gravimetric Feeders and Slakers.

Bidding blanks may be obtained from the office of the City Engineer. Specifications, and Contract Documents are on file in the office of the City Engineer.

A deposit of $15.00 for Specifications, and of $10.00 for each additional set of specifications, will be required. All deposits for specifications will be refunded upon their return in good condition within 10 days of the opening of bids.

A certified check, cashier's check or bank officer's check, for 2% of the total amount of the bid, made payable to City of Fort Lauderdale, Florida, shall accompany each proposal as evidence of good faith and responsibility of the Bidder. This check shall be retained by the payee as liquidated damages should the Bidder refuse or fail to enter into a contract with the payee for the execution of the work embraced in the Proposal, in the event the Proposal of the Bidder is accepted.

The City Commission reserves the right to reject any or all bids.

William J. Veeder
City Manager

NOTICE TO ADVERTISERS

**Because of the Labor Day Holiday
The September 5th issue will close for press on
August 29th**

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

The Advertisements in this section include all employment opportunities—executive, management, technical selling, office, skilled, manual, etc.

Positions Vacant
Positions Wanted
Part Time Work

Civil Service Opportunities . . .
Selling Opportunities Wanted
Selling Opportunities Offered

Employment Agencies
Employment Services
Labor Bureaus

DISPLAYED ———RATES——— UNDISPLAYED

DISPLAYED

The advertising rate is $31.80 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

UNDISPLAYED

$2.10 per line, minimum 3 lines. To figure payment count 5 average words as a line.

Position Wanted ads are ½ of above.

Box Numbers—counts as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS or inquiries to Classified Adv Div of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36, N. Y. Sept. 5th Issue Closes Aug. 26th

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Highway & Bridge Engineers Designers & Draftsmen

Career opportunities for men interested in professional recognition. Excellent working conditions and employee benefits including liberal retirement program.

Openings in Pennsylvania, Maryland, Mississippi, Ohio & West Virginia.

Air Mail Resume to R. L. SHAW, *Personnel Director*

MICHAEL BAKER, Jr., INC.

BAKER BLDG. *Consulting Engineers* ROCHESTER, PA.

CONSTRUCTION ENGINEERS

Foreign Employment

Career opportunity for graduate engineers in Saudi Arabia. Degree essential. Minimum 10 years experience supervising construction of industrial buildings, oil processing and oil handling facilities. To supervise actual construction by contract or service organization personnel involving control over construction methods, scheduling, expediting and progress; utilization of men and materials; and the inspection of workmanship for compliance with plans and specifications.

Salary commensurate with experience plus living allowance and generous all-inclusive benefits. Excellent community facilities.

Write outlining background and experience. Please include your telephone number.

Recruiting Supervisor, Box 214

ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE
NEW YORK 22, NEW YORK

ENGINEERS

Long established firm of consulting engineers with world-wide practice needs both beginners and experienced civil, electrical, mechanical and foundation engineers for interesting work on large dams, power-plants, and river control works. Permanent positions. Liberal employee benefits. Starting salaries dependent on qualifications. Please send complete resume to Hugo Niemi, Personnel Manager.

HARZA ENGINEERING CO.

400 W. Madison St. Chicago 6, Ill.

CIVIL ENGINEERS

GRADUATE ENGINEERS WITH ONE TO FIVE YEARS EXPERIENCE FOR HIGHWAY AND BRIDGE DESIGN IN NEW ORLEANS, LOUISIANA OR IN HARRISBURG, PA.

Permanent positions with opportunity for Advancement.

Company paid life insurance
and Pension Plan
Air Conditioned Offices
Liberal Salaries

MODJESKI AND MASTERS ENGINEERS
P. O. Box 167
Harrisburg, Penna.
2400 Canal Street
New Orleans 19, Louisiana

Employment Opportunities with the City of Springfield, Missouri

CHIEF DIVISION OF GENERAL PUBLIC WORKS OPERATIONS: Graduate Civil Engineer, age 30 to 50, for responsible professional and administrative work in the operations of the Department of Public Works.

SECTION HEAD: Graduate Civil Engineer to head paving or storm sewer design section. Must be capable of performing detailed design work as well as supervise subordinate personnel engaged in such activities.

The City of Springfield also has need of Designers, Draftsmen and Construction Inspectors.

Application for any of the above jobs should be made, giving minimum salary, to Department of Personnel, City Hall, Springfield, Missouri.

AREA ENGINEER
(CIVIL—HIGHWAYS)

FOREIGN EMPLOYMENT

U. S. Consultant requires services of broadly qualified highway engineer 15-25 years experience in design, maintenance and construction to join established group of American engineers engaged on an extensive highway program in a Near East Country. Living conditions good. Liberal salary and living allowances; transportation of family plus other attractive allowances and benefits. Send detailed personal record. Applicants' confidence will be respected.

P-5779—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

REPLIES (Box No.): Address to office nearest you
c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Gunite Superintendent—Wanted Immediately. Middle Atlantic States. State age, experience, availability, salary desired. P-4640, Engineering News-Record.

Engineer-Gunite, wanted immediately, must know estimating, take complete charge of all gunite operations. Executive position ultimately available. P-5355, Engineering News-Record.

Estimators—Experienced in Industrial Construction. Permanent positions in Southeastern States. Send resume of education and experience, references and salary requirements. P-5675, Engineering News-Record.

Civil Engineers Wanted—with experience in the fields of Highway design, structures, water distribution systems, sewers, sewage treatment, pumping stations and storm drains. Public works experience desirable but not essential. Good starting salaries, excellent working conditions; stable community, fine opportunity for advancement, Merit System increases and retirement benefits. Send resume of experience and salary desired to: Department of Public Works, Baltimore County Office Building, Towson 4, Maryland.

City Engineer and Planner, small New England city. C. E. Graduate or seven (7) years experience. Municipal experience preferred but not mandatory. Please state qualifications and salary desired in first letter. Apply, Office of Mayor, Franklin, New Hampshire.

Bridge Designers and Draftsmen with experience for permanent positions. Forward full educational, employment and personal data with salary requirements. Macomber & Faber, 1824 North Fourth Street, Harrisburg, Pennsylvania.

Excellent opportunity in Consulting Engineer's office for competent engineer experienced in design and inspection of water and sewage systems, water and sewage treatment plants, estimates, reports. State education, age, experience, salary required and when could report. Correspondence confidential. P-5747, Engineering News-Record.

Beginning Civil Engineer—Recent graduate. Mount Clemens, Michigan. Near Lake St. Clair. 20 miles Northeast of Detroit. Annual salary $5,122-$5,902. P-5509, Engineering News-Record.

Civil Engineers, Florida—Expanding consulting office on middle east coast of Florida has opening for professional grade field and office engineers experienced in municipal work, including utilities. Write complete qualifications to: Alton A. Register and Associates, Engineers, 204 Professional Building, Fort Pierce, Florida.

Estimator Wanted—Plumbing, Heating, Mechanical Piping. Top Notch, experienced man. Salary commensurate with experience and ability. Permanent position. Liberal company benefits. Air conditioned office. Submit full resume of experience to Charles Simkin & Sons, Inc., Att: S. Simkin, P. O. Box 471, Perth Amboy, N. J.

Resident Engineer Inspector with experience on disposal plant construction. Write direct to Hill & Hill Engineers, 8 Gibson Street, North East, Pennsylvania.

Civil Engineer with sanitary engineering experience or education wanted by Consulting Engineering Firm. Write P-5867, Engineering News-Record.

Engineers for municipal and industrial water supply, sewerage and treatment projects. Opportunities for permanent connection with long established firm of consulting engineers in mid-west. Both E.I.T.'s and engineers considered. Full information and references in first letter requested. P-5889, Engineering News-Record.

Established heavy contractor, water mains, sewers, treatment plants in New York State, has opening for alert younger engineer with proven background in field and office, for responsible charge of take off, purchasing, expediting, liason etc. in main office. In return for interest, sound experience, performance, hard work & hustle we offer only well compensated opportunity to advance with growing organization. P-5918, Engineering News-Record.

ESTIMATOR WANTED

A large heavy works contractor operating nationally, with headquarters in Midwest, needs the services of competent estimator. Must be experienced, particularly in highway construction field, in taking off quantities and evaluating heavy grading, structures, paving and drainage. Position requires considerable travel. Adequate compensation plus profit sharing and pension benefits to qualified man.

P-5904—Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

EMPLOYMENT SERVICE

Engrs., Designers, Draftsmen, all fields Chem. Metallurgists, I.E.'s use our national coverage. Guilford Personnel Service, 502 American Bldg., Balto. 2, Md.

POSITIONS WANTED

Construction Engineer; 20 years experience, age 41, seven years foreign, speak Spanish, French, Italian, Portuguese. Heavy industrial construction experience, will consider any type supervision or engineering, foreign or domestic. PW-5698, Engineering News-Record.

Asphalt Plant Superintendent. cost engineer —& estimator, 6 yrs, Batch and continuous plants. Age 34, Seeking permanent position in Florida. PW-5734, Engineering News-Record.

General Engineer, BS, age 30, 7 years construction experience, engineering and design, purchasing, estimating and supervision. Desires relocate in Carolinas. Plant engineering or building construction. PW-5770, Engineering News-Record.

Supt. & Project Mgr. Combination. Available for Florida work. Experienced in all phases of field construction. P.O. Box 3771, Sarasota, Florida.

Hydraulic engineer; over 20 years experience (5 foreign) on all types river developments including irrigation, hydro-electric, storage, pumping, supply, control, drainage. Age 45; writes, reads, converses fluently in Spanish. PW-5771, Engineering News-Record.

Civil Eng. 31, married, B.C.E. Grad. Studies in soil, desires position as Resident or Assist. Resident Eng., Project or Assist. Project Manager, now employed overseas, speaks Spanish, overseas position preferred. PW-5823, Engineering News-Record.

Construction Engr.-Supt; BSCE; Age 37. Fourteen years experience, field office Surveying, estimating, design. Heavy industrial construction: dams, slip-forms. Desires responsible position U. S. or foreign. PW-5821, Engineering News-Record.

Accountant in heavy construction, experience in time keeping, payroll, accounting and taxes. Will travel anywhere. Available immediately. PW-5799, Engineering News-Record.

Cost Engineer—32, 5 years field experience in fast multi-million chemical construction including electrical and piping controls. PW-5794, Engineering News-Record.

Structural Steel: 21 years experience in detail, checking and chief draftsman. Desire to re-locate midwest, west or southwest. Supervision only. PW-5839, Engineering News-Record.

Electrical Construction Superintendent available Sept. 1. Twenty-five years heavy industrial construction experience, including aircraft plant construction. Location near Santa Anna, Calif. desired. Excellent references PW-5895, Engineering News-Record.

Building Construction Field Supt: Industrial, commercial, institutional, churches, etc., similar position in field desired. 25 years exp; Resident of N. J.; Can travel. PW-5912, Engineering News-Record.

Civil Engineer, B.S.c (Eng.) 30, married. 5 years broad experience in engineering design & construction (Civil, Structural & Hydraulic) work. Desires responsible position with progressive firm operating in Latin America. Fluent knowledge of Spanish. Present location Canada. PW-5887, Engineering News-Record.

(Continued on page 122)

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For nationally known firm in midwest U. S., engaged in design and construction of process facilities such as refinery and chemical plants. Applicant must have experience in field supervision of large size projects. Position entails close cooperation with clients and design engineers. Considerable traveling involved. Applicant should preferably be in the 40-50 age group. Send complete details of education, experience, past and present salaries. List references and enclose recent snapshot if available.

P-5832, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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P-5744—Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

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Prefer several years or more experience in any of these fields:

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BUILDINGS
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We are professional engineers engaged primarily in design which covers a wide scope of practice. The variety and unusual character—for example, the proposed world's largest bridge project—offer excellent opportunity for professional development and advancement.

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1—General Superintendent
3—Building construction and concrete superintendents
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P-5897—Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

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P-5915—Engineering News-Record
520 N. Michigan Avenue, Chicago 11, Ill

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SW-4684, Engineering News Record,
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

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Young woman with accounting, management, and executive secretarial experience desires challenging job in midtown New York area. Resume upon request. PW-5870, Engineering News-Record.

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Learn latest methods to organize and run work. Prepare for the top jobs.

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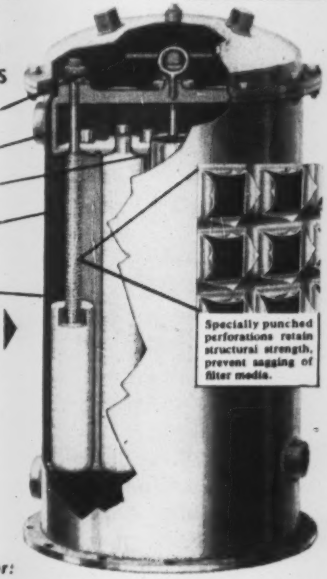

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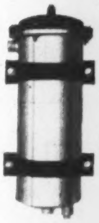

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Editorials

Learning From Disaster

Considering the possibilities, had it occurred in other than the early morning hours, Mexico City's earthquake of July 28 could have been a major disaster in which hundreds, rather than about 125, lives were lost. As it was, big buildings and little; shanties and cathedrals; hotels, factories and skyscraper office buildings, the oldest structures in the Western Hemisphere and the newest and best of modern construction—all were bounced around violently, and all too many suffered serious damage (ENR Aug. 15, p. 38).

As always in an earthquake, this damage is instructive. In Mexico City's case the instruction will be bought at a bargain rate if it is pursued intently and put to effective use. And since this was the largest test yet of relatively tall modern structures under major earthquake forces, building design everywhere can profit.

Mexican engineers are making intensive studies of the damaged buildings. Their conclusions should prove exceedingly valuable, but they may not be available for some time. In the interim, here are a few points the earthquake drove home:

1. Sound design provisions in a code are not enough; the code must also be enforced.

2. In seismic zones, all components of a building should be rigidly connected to vibrate as a unit.

3. Adjoining structures should be sufficiently separated so as not to strike each other, and consideration should be given also to possible subsurface interaction.

4. Heavy masses poised on stilt-like columns may be architecturally appealing but are far from ideal in resisting seismic forces.

5. While flexible structural frames may not suffer damage in a temblor, their movements may damage walls, windows and partitions. To counter this, a limit on the maximum relative deflection of floors may be advisable.

6. Exterior walls should be anchored to the floors and perhaps also to columns, but sufficient clearance should be provided to prevent the walls from being damaged when the structural frame deforms.

7. Windows should be free to move when their own frames are skewed, and partitions free to shift when floors and ceilings do.

8. A buffer between structural steel columns and fireproofing may be desirable.

9. Buildings should be designed not only to prevent overturning but also to right themselves automatically when tilted out of plumb.

10. Shear and moment connections between columns and girders or slabs may have to be heavier than dictated by present codes, which allow a one-third increase in unit stresses for seismic forces.

11. Since chances are good that many of the tall buildings were damaged because their natural frequency was the same as the peak frequency of the ground, possibilities for changing the natural frequency of a building, if resonance should occur, are worth investigating. For example, cracking of shear walls could change the period of vibration, as could formation of plastic hinges at girder-column connections, or emptying of a water tank.

It is also noteworthy that in the July 28 quake maximum damage in tall buildings occurred at different levels. In the structures that apparently vibrated in the fundamental mode, the greatest damage was observed near the base; the more flexible the frame the higher the location of bad breakage. In buildings that vibrated in the second mode, the maximum injury was found both near the base and at or near the probable node, i.e., slightly above midheight. Except for a few collapsed penthouses, upper stories were not seriously harmed. It should be profitable to check these observations against shears and deformations computed by currently accepted aseismic design theories.

Another noteworthy observation is that no building failed by overturning, despite the watery subsoil. Does this mean that there is no danger of ordinary buildings failing in this manner? On the other hand, if overturning is to be investigated, what forces should be used?

Answers to these and many other questions may be forthcoming when the reports are in from the numerous investigations prompted by the Mexico City earthquake. If prompt action is taken to apply the lessons learned from this disaster, many lives may be saved and much damage prevented in the future.

Dream Project Comes True

A Niagara hydroelectric project is at last under way by the Power Authority of the State of New York (see page 27), after the question of developing the wasting U.S. share of Niagara River water had been kicked from pillar to post for seven long years.

In the middle of the conflict among federal, state and private power interests appeared the famed public works phenomenon of our times, Robert Moses, to wage successful battle for the State of New York. Our expressed hope had been that the ready, willing and able private power companies would build the project. But whatever wind the wreckage of Schoelkopf station didn't take out of the private sails, Mr. Moses did.

Many of his admirers will argue that without him the Niagara project would still not be assigned. Whether they are right or wrong, the PASNY chairman deserves high credit both for bringing the project to his agency and for getting it off to such a fast start.

With one large supply contract already let and several construction awards to be made in October, construction dust will soon be rising, and another "dream" project will be under way.

LINCOLN TUNNEL — THIRD TUBE

Third tube of Lincoln Tunnel, under the Hudson River. Owner and Engineer: The Port of New York Authority. General Contractor: Joint Venture—Mason, Johnson and MacLean, New York City. Pozzolith Ready-Mix concrete produced by Hudson Builders Material, Inc., Jersey City, N. J.

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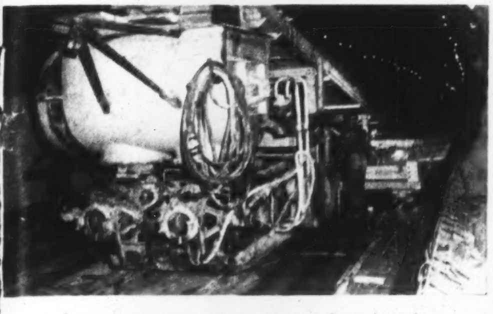
92

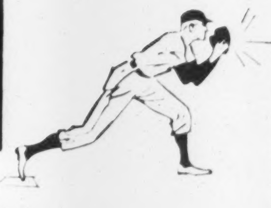
Ready-mix truck on top side of tunnel discharges concrete into "elephant trunk" . . .

Concrete goes down "elephant trunk" to buggies in tunnel . . .



Concrete pump receives concrete from buggies and pumps it into tunnel lining forms.

"Triple-Play" Concrete ... with POZZOLITH



From ready-mix truck . . . to buggy . . . to concrete pump . . . to tunnel lining—"triple-play" handling while retaining good flowability and minimum bleeding—this was the performance of concrete produced with Pozzolith in the construction of The Port of New York Authority's $100,000,000 Lincoln Tunnel third tube.

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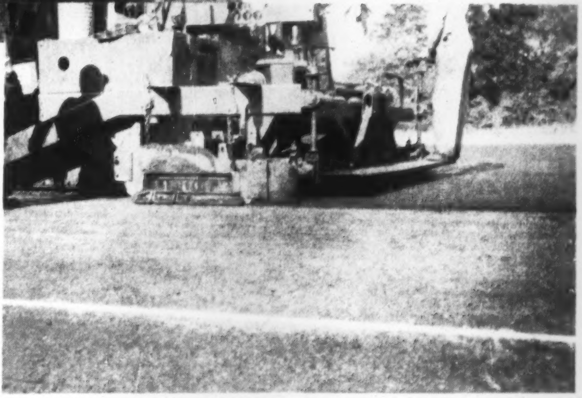
Applying Texaco Asphalt during construction of 7-inch Asphalt (Penetration) Macadam foundation.



Laying second course of the 2½-inch hot-mix Texaco Asphaltic Concrete wearing surface.

The chain of popular summer resorts along the New Jersey shore are now reached in a fraction of the time formerly required, thanks to the new Garden State Parkway. This toll road is another example of the use of heavy-duty, smoother-riding, lower-cost Asphalt construction on modern, limited-access expressways.

Both the foundation and wearing surface of the final 9-mile section of the Parkway just completed were constructed with Texaco Asphalt. The 7-inch foundation is Texaco Asphalt (Penetration) Macadam, laid in two courses. The 2½-inch wearing surface is hot-mix, hot-laid Texaco Asphaltic Concrete. Shoulders on both sides of each 24-foot lane have a Texaco Asphalt (Penetration) Macadam wearing surface.

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